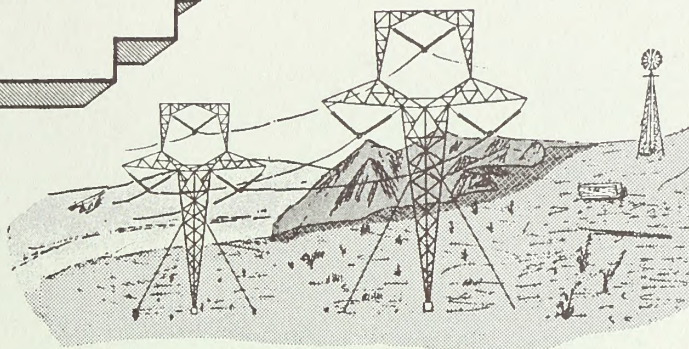
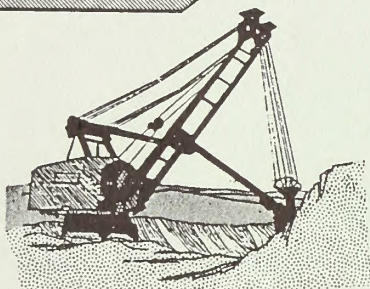
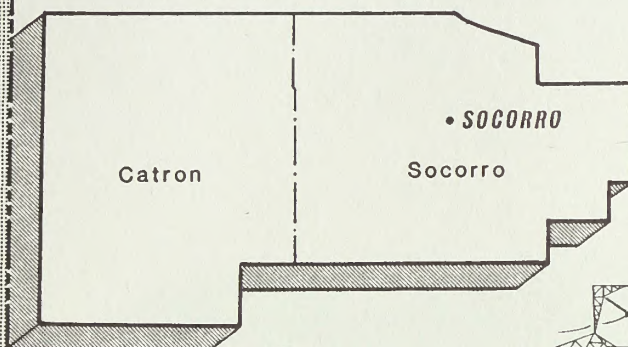




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**DRAFT**

# RESOURCE MANAGEMENT PLAN



U.S. DEPARTMENT OF THE INTERIOR

Bureau of Land Management

Las Cruces District

Socorro Resource Area

January 1988







# United States Department of the Interior

## BUREAU OF LAND MANAGEMENT

### SOCORRO RESOURCE AREA

198 Neel Ave., N.W.  
Socorro, New Mexico 87801

## Notice

Enclosed for your review and comment is the Draft Socorro Resource Management Plan (RMP) and Environmental Impact Statement (EIS). This RMP is an attempt to integrate all resources into a single unified program of management after considering a reasonable range of alternatives. Your review and comments are needed at this time to ensure that your concerns have been considered in the planning process.

Please direct your written comments to:

RMP Team Leader  
USDI - Bureau of Land Management  
Socorro Resource Area  
198 Neel Avenue, NW  
Socorro, NM 87801

Written comments must be postmarked no later than April 22, 1983.

Please use this address when requesting further information on materials referenced in the Draft RMP/EIS.

Oral comments will be accepted at the following public hearings:

<u>Date</u>	<u>Time</u>	<u>City</u>	<u>Location</u>
March 23	7 p.m.	Quemado, NM	Community Center
March 24	7 p.m.	Socorro, NM	BLM Office, 198 Neel Avenue, NW

A 10-minute time limit will be placed on oral comments. Oral comments should be accompanied by a written synopsis of the presentation. Written and oral comments will be fully considered and evaluated in preparation of the Proposed RMP and Final EIS.

If changes are minor, the Proposed RMP and Final EIS will only include those changes and will not be a full reprint of the Draft RMP/EIS. For this reason, reviewers are requested to retain their copy of the Draft RMP/EIS for use in conjunction with the Proposed RMP and Final EIS.

Harlen Smith  
Area Manager





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# ***SOCORRO* RESOURCE MANAGEMENT PLAN AND ENVIRONMENTAL IMPACT STATEMENT**

JANUARY 1988

PREPARED BY:  
U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

# **SOCORRO**

## **Resource Management Plan and Environmental Impact Statement**

Draft (X)    Final ( )

The United States Department of the Interior, Bureau of Land Management

1. Type of Action:    Administrative (X)    Legislative ( )

2. Abstract: This Draft Resource Management Plan and Environmental Impact Statement describes and analyzes four alternatives for managing the public lands and resources in the Socorro Resource Area, New Mexico. They are: (A) No Action Alternative, (B) Balanced Alternative, (C) Conservation Alternative, and (D) Resource Production Alternative.

3. Comments have been requested from the individuals, groups and agencies shown on the partial distribution list in Chapter 5.

4. For further information contact:

Harlen Smith, Area Manager  
Bureau of Land Management  
Socorro Resource Area  
198 Neel Avenue, NW  
Socorro, NM 87801


Telephone: (505) 835-0412


5. Date Draft filed with Environmental Protection Agency: January 15, 1988

6. Comments on the Draft Resource Management Plan and Environmental Impact Statement must be postmarked no later than: April 22, 1988

Recommended:

Approved:

  
\_\_\_\_\_  
H. James Fox  
District Manager  
Las Cruces District Office

  
\_\_\_\_\_  
Larry L. Woodard  
State Director  
New Mexico State Office



# TABLE OF CONTENTS

	<u>Page</u>
SUMMARY . . . . .	S- 1
CHAPTER 1: PURPOSE AND NEED	
Purpose and Need . . . . .	1- 1
Location and Description of the Planning Area . . . . .	1- 1
Planning Process . . . . .	1- 1
Planning Issues, Criteria, and Management Concerns . . . . .	1- 3
Issue No. 1: Land Ownership Adjustments . . . . .	1- 4
Issue No. 2: Vegetative Uses . . . . .	1- 5
Issue No. 3: Off-Road Vehicle Use . . . . .	1- 5
Issue No. 4: Access . . . . .	1- 6
Issue No. 5: Special Management Areas . . . . .	1- 6
Issue No. 6: Wild Horse Management . . . . .	1- 6
Issue No. 7: Coal Leasing Suitability/Assessment . . . . .	1- 6
Management Concern: Fluid Leasing . . . . .	1- 7
Management Concern: Right-of-way Exclusion and Avoidance Areas . . . . .	1- 7
CHAPTER 2: PLAN ALTERNATIVES	
Introduction . . . . .	2- 1
Continuing Management Guidance and Actions . . . . .	2- 1
Minerals . . . . .	2- 2
Rangeland . . . . .	2- 4
Wild Horses . . . . .	2- 9
Lands . . . . .	2- 9
Access . . . . .	2-12
Forestry . . . . .	2-12
Soils/Water Resources . . . . .	2-13
Air Quality . . . . .	2-14
Fire . . . . .	2-15
Wildlife . . . . .	2-15
Cultural Resources . . . . .	2-17
Paleontology . . . . .	2-21
Recreation/Off-Road Vehicles . . . . .	2-21
Visual Resources . . . . .	2-22
Wilderness . . . . .	2-23
The Proposed Action and Alternatives . . . . .	2-23
Alternative A - Current Management (No Action) . . . . .	2-24
Alternative B - Balanced . . . . .	2-27
Alternative C - Resource Conservation . . . . .	2-37
Alternative D - Resource Production . . . . .	2-44
CHAPTER 3: AFFECTED ENVIRONMENT	
Introduction . . . . .	3- 1
Topography . . . . .	3- 1
Climate . . . . .	3- 1
Minerals . . . . .	3- 1
Vegetation . . . . .	3-15
Livestock Grazing . . . . .	3-20
Wild Horses . . . . .	3-27
Lands . . . . .	3-29

# TABLE OF CONTENTS (continued)

## Page

Access . . . . .	3-22
Forestry . . . . .	3-33
Soils/Water Resources . . . . .	3-34
Air Quality . . . . .	3-37
Fire . . . . .	3-37
Wildlife . . . . .	3-38
Cultural Resources . . . . .	3-48
Paleontology . . . . .	3-51
Recreation/Off-Road Vehicles . . . . .	3-51
Visual Resources . . . . .	3-53
Wilderness . . . . .	3-53
Social and Economic Conditions . . . . .	3-53

## CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

Introduction . . . . .	4- 1
Continuing Management Guidance and Actions . . . . .	4- 1
Minerals . . . . .	4- 1
Rangeland . . . . .	4- 2
Wild Horses . . . . .	4- 3
Lands . . . . .	4- 3
Forestry . . . . .	4- 3
Soils/Water Resources . . . . .	4- 3
Air Quality . . . . .	4- 4
Wildlife . . . . .	4- 4
Cultural Resources . . . . .	4- 4
Paleontology . . . . .	4- 5
Recreation/Off-Road Vehicles . . . . .	4- 5
Visual Resources . . . . .	4- 5
Social and Economic Conditions . . . . .	4- 5
The Proposed Impacts by Alternative . . . . .	4- 5
Alternative A - Current Management (No Action) . . . . .	4- 5
Alternative B - Balanced . . . . .	4-26
Alternative C - Resource Conservation . . . . .	4-43
Alternative D - Resource Production . . . . .	4-59

## CHAPTER 5: CONSULTATION AND COORDINATION

Introduction . . . . .	5- 1
Formal Consultation . . . . .	5- 1
Consistency with Other Plans . . . . .	5- 1
Public Participation . . . . .	5- 2
Public Review of the Draft RMP/EIS . . . . .	5- 2
Allottee Consultations . . . . .	5- 2

## APPENDICES

Appendix A: Summary of Management Framework Plan Decisions . . . . .	A- 1
Appendix B: Mineral Resources Policy and Fluid Leasing Procedures . . . . .	B- 1
Appendix C: Rangeland . . . . .	C- 1
Appendix D: No Grazing Alternative . . . . .	D- 1
Appendix E: Lands and Minerals Disposal Policy . . . . .	E- 1
Appendix F: Access Analysis Methodology . . . . .	F- 1



# TABLE OF CONTENTS (continued)

	<u>Page</u>
Appendix G: Soils . . . . .	G- 1
Appendix H: Cultural Resource History, Classes, Goal System, and Use Categories . . . .	H- 1
Appendix I: Recreation/Off-Road Vehicles . . . . .	I- 1
Appendix J: Visual Resource Management Classes . . . . .	J- 1
Appendix K: Ranch Budgets . . . . .	K- 1
Appendix L: Special Management Areas . . . . .	L- 1
Ladron Mountain . . . . .	L- 3
Pelona Mountain . . . . .	L- 6
Divide Tin . . . . .	L- 9
Aqua Fria . . . . .	L-11
Cerro Pomo . . . . .	L-14
Sawtooth . . . . .	L-16
Soaptree . . . . .	L-17
Horse Mountain . . . . .	L-19
Stallion . . . . .	L-21
Puertecito . . . . .	L-24
Fence Lake . . . . .	L-27
Tinajas . . . . .	L-30
Fort Craig . . . . .	L-32
Continental Divide National Scenic Trail . . . . .	L-34
Datil Well Campground . . . . .	L-36
Walnut Canyon . . . . .	L-38
The Box . . . . .	L-40
Teypama . . . . .	L-42
Newton Site . . . . .	L-44
Playa Pueblos . . . . .	L-45
Rio Salado . . . . .	L-46
Town of Riley . . . . .	L-48
Mogollon Pueblo . . . . .	L-49
Mockingbird Gap . . . . .	L-50
San Lorenzo Canyon . . . . .	L-51
San Pedro . . . . .	L-53
Iron Mine Ridge . . . . .	L-54
Taylor Canyon . . . . .	L-55
Harvey Plot . . . . .	L-56
Zuni Salt Lake . . . . .	L-58
Appendix M: Federal Coal Lands Review Process . . . . .	M- 1
GLOSSARY . . . . .	GL-1
REFERENCES . . . . .	R- 1
INDEX . . . . .	IN-1

## LIST OF TABLES

### Table

S- 1	Summary of Anticipated Impacts . . . . .	S- 5
2- 1	Estimated Surface Disturbing Actions per Year for a 20-Year Period . . . . .	2- 1
2- 2	Wildlife Habitat Occupancy Restrictions. . . . .	2-16
2- 3	ROS Class Management Objectives . . . . .	2-22
2- 4	Visual Resource Class Objective Acreages . . . . .	2-23
2- 5	Specifically Identified Disposal and Acquisition Surface Acreages by Alternative .	2-24
2- 6	Existing Fluid Leasing Stipulations . . . . .	2-29

# LIST OF TABLES (continued)

Table	Page
2- 7 Special Management Areas for Alternative B . . . . .	2-34
2- 8 Abbreviated Definitions of Proposed Fluid Leasing Stipulations . . . . .	2-34
2- 9 Averages Under Proposed Fluid Leasing Stipulations . . . . .	2-38
2-10 Special Management Areas for Alternative C . . . . .	2-42
2-11 Special Management Areas for Alternative D . . . . .	2-49
3- 1 Comparison of Salt Lake Coals to Fruitland Coals . . . . .	3- 5
3- 2 Known Locatable Mineral Resource Areas . . . . .	3-10
3- 3 Minerals Sales (Sand, Gravel, Building Stone) . . . . .	3-15
3- 4 Public Land Acres by Range Site Within Chupadera Mesa Area . . . . .	3-18
3- 5 Approximate Acres of Vegetation Types and Subtypes in Chupadera Mesa . . . . .	3-20
3- 6 Ecological Condition Class by Allotment . . . . .	3-22
3- 7 Apparent Trend by Allotment . . . . .	3-22
3- 8 Summary of Grazing Use for Allotments in Chupadera Mesa . . . . .	3-26
3- 9 Land Status/Acres for Bordo Atravesado Allotment . . . . .	3-27
3-10 Estimated Population Levels . . . . .	3-27
3-11 Land Status (in Acres) . . . . .	3-30
3-12 Standard Habitat Sites Comparison Data . . . . .	3-39
3-13 Number of Species by Major Grouping Using Each Standard Habitat Site . . . . .	3-40
3-14 Standard Habitat Sites Utilized by Game Species . . . . .	3-41
3-15 Potential and Confirmed Animal Species on Public Lands . . . . .	3-46
3-16 All Sites in Catron and Socorro Counties . . . . .	3-50
3-17 BLM Sites in Catron and Socorro Counties . . . . .	3-50
3-18 Existing ORV Designated Acreages . . . . .	3-53
3-19 Socorro Resource Area Wilderness Recommendations . . . . .	3-53
3-20 Population Change, by County and Resource Area, 1970 to 1980 . . . . .	3-55
3-21 Housing Change, by County and Resource Area, 1970 to 1980. . . . .	3-55
3-22 Employment Change, by County and Resource Area, 1970 to 1980 . . . . .	3-56
3-23 Per Capita Income Change, by County and Resource Area, 1970 to 1980 . . . . .	3-57
4- 1 Estimated Acre Averages per Year of Surface Disturbing Activities for a 20-Year Period . . . . .	4- 2
4- 2 Oil and Gas Resources Potentially Affected by the Land Ownership Adjustment Issue - Alternatives A, B, C, and D . . . . .	4- 6
4- 3 Oil and Gas Resources Affected by Fluid Leasing Decisions - Alternative A . . . . .	4- 7
4- 4 Geothermal Resources Affected by Fluid Leasing - Alternative A . . . . .	4- 9
4- 5 Areas of High to Moderate Potential for Locatable Minerals within Areas of Consideration of Disposal - Alternatives A, B, C, and D . . . . .	4-10
4- 6 Impacts to Mineral Material Resources by Alternative . . . . .	4-14
4- 7 Impacts of Disposing of Public Lands for All Alternatives . . . . .	4-17
4- 8 Impacts of Acquiring Non-Public Lands for All Alternatives . . . . .	4-17
4- 9 Oil and Gas Resources Affected by Fluid Leasing Decisions - Alternative B . . . . .	4-27
4-10 Geothermal Resources Affected by Fluid Leasing Decisions - Alternative B . . . . .	4-30
4-11 Oil and Gas Resources Affected by Fluid Leasing Decisions - Alternative C . . . . .	4-45
4-12 Geothermal Resources Affected by Fluid Leasing Decisions - Alternative C . . . . .	4-47



## LIST OF TABLES (continued)

<u>Table</u>	<u>Page</u>
4-13 Oil and Gas Resources Affected by Fluid Leasing Decisions	
- Alternative D . . . . .	4-61
4-14 Geothermal Resources Affected by Fluid Leasing Decisions	
- Alternative D . . . . .	4-64
5- 1 Partial Listing of Document Recipients . . . . .	5- 3
5- 2 List of Preparers . . . . .	5- 4
C- 1 Present Allotment Status and Category by Environmental Impact Statement . . . . .	C- 2
C- 2 Livestock Grazing by Alternative for Chupadera Mesa Allotments . . . . .	C- 8
C- 3 Selected Mapping Units and Assigned Range Sites . . . . .	C-16
C- 4 Herbicides Proposed for Use . . . . .	C-16
G- 1 Major Soils of the Socorro Resource Area . . . . .	G- 1
I- 1 Steps in the Emergency Closure Process . . . . .	I- 6
K- 1 Livestock Inventory for Medium Commercial Cow-Calf Ranches, Socorro Resource Area . . . . .	K- 2
K- 2 Estimated Receipts for Medium Commercial Cow-Calf Ranches, Socorro Resource Area . . . . .	K- 2
K- 3 Estimated Costs for Medium Commercial Cow-Calf Ranches, Socorro Resource Area . . . . .	K- 3
K- 4 Livestock Inventory for Large Commercial Cow-Calf Ranches, Socorro Resource Area . . . . .	K- 5
K- 5 Estimated Receipts for Large Commercial Cow-Calf Ranches, Socorro Resource Area . . . . .	K- 5
K- 6 Estimated Costs for Large Commercial Cow-Calf Ranches, Socorro Resource Area . . . . .	K- 6
K- 7 Estimated Costs and Returns for All Ranch Operations, 1982 Dollars . . . . .	K- 8
L- 1 Land Status, Divide Tin SMA . . . . .	L- 9
M- 1 Coal Acreages Brought Forth Under Each Alternative . . . . .	M- 6
M- 2 Estimated Coal Tonnage Brought Forth Under Each Alternative . . . . .	M- 6
M- 3 Acreages Covered by Unsuitability Criteria Nos. 1 through 20 Determined Suitable Upon Execution of Mitigating Measures . . . . .	M- 7

## LIST OF MAPS

<u>Map</u>	
2- 1 Grazing EIS Areas . . . . .	2- 6
2- 2 Land Tenure Adjustment - Alternative A . . . . .	2-25
2- 3 ORV Designations - Alternative A . . . . .	2-28
2- 4 Existing Legal Access . . . . .	2-29
2- 5 ROW Exclusion and Avoidance Areas - Alternative A . . . . .	2-30
2- 6 Land Tenure Adjustment - Alternative B . . . . .	2-31
2- 7 ORV Designations - Alternative B . . . . .	2-34
2- 8 Special Management Areas . . . . .	2-35
2- 9 San Augustine Coal Area Federal Mineral Estate - Alternative B . . . . .	2-36
2-10 Fluid Leasing Stipulations - Alternative B . . . . .	2-38
2-11 ROW Exclusion and Avoidance Areas - Alternative B . . . . .	2-39
2-12 Land Tenure Adjustment - Alternative C . . . . .	2-42

## LIST OF MAPS (continued)

<u>Map</u>		<u>Page</u>
2-13	ORV Designations - Alternative C . . . . .	2-43
2-14	Fluid Leasing Stipulations - Alternative C . . . . .	2-46
2-15	ROW Exclusion and Avoidance Areas - Alternative C . . . . .	2-47
2-16	Land Tenure Adjustment - Alternative D . . . . .	2-48
2-17	Fluid Leasing Stipulations - Alternative D . . . . .	2-50
2-18	ROW Exclusion and Avoidance Areas - Alternative D . . . . .	2-51
3- 1	Topographic and Other Features of the Socorro Resource Area. . . . .	3- 2
3- 2	Coal and Geothermal Potential . . . . .	3- 5
3- 3	Oil and Gas Potential . . . . .	3- 6
3- 4	Hardrock Minerals Potential . . . . .	3- 9
3- 5	Saleable Minerals Potential . . . . .	3-14
3- 6	Chupadera Mesa . . . . .	3-18
3- 7	Vegetation Types . . . . .	3-19
3- 8	Ecological Condition Class by Allotment . . . . .	3-21
3- 9	Range Trend . . . . .	3-23
3-10	Chupadera Mesa Allotments . . . . .	3-25
3-11	Bordo Atravesado Wild Horse Management Area . . . . .	3-28
3-12	Deer Herd Units . . . . .	3-42
3-13	Pronghorn Herd Units . . . . .	3-43
3-14	Elk Herd Units . . . . .	3-44
3-15	Wilderness Study Areas . . . . .	3-55
F- 1	Access Tracts - Alternatives B, C, and D . . . . .	F- 3
G- 1	Major Land Resource Areas . . . . .	G- 5
J- 1	VRM Class Areas . . . . .	J- 3
L- 1	Ladron Mountain . . . . .	L- 5
L- 2	Pelona Mountain . . . . .	L- 8
L- 3	Divide Tin . . . . .	L-10
L- 4	Aqua Fria . . . . .	L-13
L- 5	Cerro Pomo . . . . .	L-15
L- 7	Soaptree . . . . .	L-18
L- 8	Horse Mountain . . . . .	L-20
L- 9	Stallion . . . . .	L-23
L-10	Puertecito . . . . .	L-26
L-11	Fence Lake . . . . .	L-29
L-12	Tinajas . . . . .	L-31
L-13	Fort Craig . . . . .	L-33
L-14	Continental Divide National Scenic Trail . . . . .	L-35
L-15	Datil Well Campground . . . . .	L-37
L-16	Walnut Canyon. . . . .	L-39
L-17	The Box . . . . .	L-41
L-18	Teypama . . . . .	L-43
L-21	Rio Salado . . . . .	L-47
L-25	San Lorenzo Canyon . . . . .	L-52
L-29	Harvey Plot . . . . .	L-57
M- 1	Comparison of Potential Coal Areas . . . . .	M- 3
M- 2	San Augustine Coal Area . . . . .	M- 4

## LIST OF FIGURES

### Figure

1- 1	RMP Process . . . . .	1- 2
4- 1	Long-Term Changes in Ecological Condition - Alternative A . . . . .	4-15
4- 2	Long-Term Changes in Ecological Condition - Alternative B . . . . .	4-33
4- 3	Long-Term Changes in Ecological Condition - Alternative C . . . . .	4-50
4- 4	Long-Term Changes in Ecological Condition - Alternative D . . . . .	4-66
B- 1	Form 3100-11 . . . . .	B- 3
C- 1	Range Condition Worksheet . . . . .	C-11
C- 2	Loamy Range Site . . . . .	C-12
C- 3	Guide for Determining Trend . . . . .	C-13
D- 1	Long-Term Changes in Ecological Condition - No Grazing . . . . .	D- 1
M- 1	Application of Coal Land-Use Planning Screens for Impact Analysis. . . . .	M- 2

VISUAL: Back Map Pocket





## SUMMARY

The Draft Socorro Resource Management Plan (RMP) and Environmental Impact Statement (EIS) identifies and analyzes the future options for managing the 1,520,610 acres of public land and 2,235,440 acres of Federal mineral estate administered by the Bureau of Land Management (BLM), Las Cruces District, Socorro Resource Area (SRA). The SRA administers public lands and resources (described in detail in Chapters 1 and 3 of this document) in Socorro and Catron Counties.

The Socorro RMP is being prepared using the BLM planning regulations issued under the authority of the Federal Land Policy and Management Act of 1976. When completed, the RMP will provide a comprehensive framework for managing and allocating public land and resources within the SRA over the next ten to twenty years. The contents of this Draft RMP/EIS document primarily focus on resolving key resource management issues. These issues are: land ownership adjustments, vegetative uses, off-road vehicle (ORV) use, access, special management areas (SMA), wild horse management, and coal leasing suitability assessment. In addition to issues, fluid leasing and right-of-way exclusion and avoidance area management concerns are addressed in the Draft Plan.

Each of the issues, management concerns, and planning criteria are discussed in Chapter 1. Several problems brought up during the issue identification process are not included as separate major issues in the RMP/EIS. Some of these are resolvable within the Continuing Management Guidance and Actions; others, such as the protection of significant cultural resources, critical watersheds, and sensitive plant areas, would be resolved with the identification of SMAs as proposed in Issue 5. Those aspects of current management that are not at issue are covered in the Continuing Management Guidance and Actions section of Chapter 2. The Continuing Management Guidance and Actions was developed primarily from laws, regulations, manuals, and three existing land-use plans.

Four RMP alternatives have been developed to describe the different management options available to BLM for the SRA. These alternatives were developed to respond to the issues and concerns expressed by the public and BLM early in the planning process. Each alternative presents a different blend and balance of resource allocations and uses. Together with the Continuing Management Guidance and Actions, each of the alternatives forms a separate, feasible land-use plan.

The alternatives in this EIS are designed to provide general management guidance. Specific projects for a given area or resource will be detailed in future activity plans. These plans discuss more precisely how a particular area or resource is to be managed, and ensure compliance with the approved RMP's resolution of the issues.

The four RMP alternatives are summarized below and are further described in Chapter 2. The impacts anticipated from all of these alternatives are described in Chapter 4, and a comparative summary of impacts is included in Table S-1.

"No grazing" was initially proposed as an alternative for the vegetative uses issue. However, since a "No Grazing Alternative" would not conform to the BLM requirement that alternatives be feasible, practical, and implementable on a resource area-wide basis, it was eliminated from consideration. The impacts of implementing a No-Grazing Alternative on the public lands in the issue area are described in Appendix D.

The following description summarizes the key points of each alternative:

## ALTERNATIVE A

The Current Management Alternative (A) constitutes the no action alternative. This alternative describes the current management of the resources affected by the planning issues. As with all alternatives, other resources would continue to be managed as described in the Continuing Management Guidance and Actions section of Chapter 2.

Under the three existing land-use plans, approximately 61,700 acres of public lands would be identified for disposal and 34,000 acres of nonpublic lands as suitable for acquisition.

No change in the current rangeland management of the Chupadera Mesa area would occur. The information and data contained in this alternative would be used to establish a baseline for vegetative monitoring studies for all alternatives. Vegetative manipulations would occur in some areas for wildlife and livestock management purposes, but only after completing site-specific environmental assessments.

No new ORV "open", "closed", or "limited" areas would be designated in the SRA. Existing ORV designations call for the majority of public lands in Socorro County to have a limited designation and the majority of public lands in Catron County as open.

Access for public lands would be done based on existing land-use plans and would be done on a case-by-case basis.

The SRA would continue to manage the following existing SMAs: Bat Cave, Tinajas Area of Critical Environmental Concern (ACEC), Fort Craig, Datil Well Campground, and Teypama.

Wildhorses would be managed at the established level of 32 animals as specified in the existing Wild Horse Management Plan.

There would be no lands carried forward for further coal leasing consideration.

Fluid mineral leasing would continue to be issued with the standard oil and gas or geothermal lease provisions. Approximately 872,000 acres of Federal minerals would continue to be subject to one or more of the current stipulations.

Existing right-of-way corridors would be utilized for major actions and no new corridors would be developed.

## ALTERNATIVE B

Alternative B, the preferred alternative for this RMP/EIS is designed to provide balanced management direction. Its goal is to resolve the issues and concerns by providing for a combination of resource uses that would protect important environmental values and sensitive resources, while at the same time allowing development of resources which provide commercial goods and services.

Approximately 100,320 acres of public lands would be disposed of and 81,200 acres of nonpublic land would be acquired. Public lands totaling 1,420,290 acres would be retained. Disposal actions would occur through exchange or sale. Exchange with government agencies would be given priority. The priority for exchanges and acquisitions would be for nonpublic lands within SMAs.

All allotments in the Chupadera Mesa would be placed in an "M" category. Small isolated problem areas within allotments would be managed as category "I" areas. A forage allocation of 1,940 animal unit months (AUM) when available would be implemented increasing preference to 29,948 AUMs. Wildlife would receive 330 AUMs.

Vegetative land treatments would be implemented on approximately 164,000 acres of public land in the East Socorro Grazing Environmental Statement (ES) and the Chupadera Mesa areas. Target species include snakeweed, mesquite, creosotebush, and sandsage infested areas.

The majority of ORV use in the SRA would be designated as "open" or "limited" with some road closures in SMAs.

Activity plans for access would be developed based on a combination of resource conservation and production needs.

Thirty SMAs, totaling 348,200 acres, would be identified for implementation. Planned actions within SMAs generally restrict mineral



development, authorizations for rights-of-way, leases, material sales, firewood cutting, and ORV use. Four SMAs would be designated as ACECs.

The wild horse herd would be increased to an average of 50 animals and the range would be designated as a wild horse management area.

Approximately 27,640 acres of Federal lands would be carried forward for further coal leasing consideration.

Protective fluid leasing stipulations would be selectively applied to public lands in the SRA, at varying levels, to control surface disturbing activities. Stipulations would be applied to 1,147,000 acres. Thirty-four thousand acres would be under "no surface occupancy".

Existing utility corridors would be eliminated. Fifteen thousand and eighty acres of public land would be closed to right-of-way development and 383,752 acres would be restricted.

## ALTERNATIVE C

Alternative C places primary emphasis on maintaining or improving important environmental values. Commodity or nonrenewable resource use would be permitted only to an extent compatible with this resource conservation emphasis. The goal of this alternative is to change present management direction so that identified issues are resolved in a manner that gives priority to maintenance or improvement of environmental values.

Approximately 39,040 acres of public land would be disposed of and 51,500 acres of nonpublic land acquired. Public lands totaling 1,481,570 acres would be retained, but could be considered for exchange to further consolidate public and nonpublic land holdings.

The authorized grazing use of 28,008 AUMs would be reduced to 25,508 AUMs. Additional

forage derived through grazing management and vegetative land treatments would be reserved for the enhancement of wildlife habitat, watershed, and recreation resources.

ORV designations would identify 690,740 acres as open and 581,540 acres as limited. Within SMAs 248,300 acres would be closed.

Resource conservation programs would be given priority when developing activity plans for access and closure, and rehabilitation of undesirable vehicle routes would also be emphasized.

Twenty-nine SMAs, totaling 286,070 acres, would be identified for implementation. Planned actions within SMAs generally prohibit mineral development, authorizations for rights-of-way, leases, material sales, woodcutting, and ORV use. Sixteen SMAs would be designated as ACECs.

Wild horses would be allowed to naturally increase to the full carrying capacity of Federal lands. This would result in approximately 2,148 AUMs being allocated for 179 horses.

Approximately 26,460 acres of Federal lands would be carried forward for further coal leasing consideration and 2,540 acres would be dropped from further consideration.

Protective fluid leasing stipulations would be selectively applied to public lands in the SRA for the maximum protection of resources, other than minerals. Stipulations would be applied to 1,074,000 acres of public lands. Seventy-four thousand acres would be closed to leasing.

Right-of-way corridors would be eliminated, 398,832 acres of public lands would be closed to development of rights-of-way, and 14,470 acres would be restricted. The remainder of public lands in the SRA would be open to right-of-way development.

# ALTERNATIVE D

Alternative D is the resource production alternative. This alternative would place primary emphasis on making public land and resources available for use and development. The principles of multiple use and sustained yield would be observed, and environmental values would be protected to the extent required by applicable laws, regulations, and policies. The goal of this alternative is to change management direction in the SRA so that the issues and concerns are resolved in a manner that generally places highest priority on the production of resources from the public lands.

Approximately 231,000 acres of public land would be disposed of and 40,280 acres of nonpublic land would be acquired. Public land totaling 1,289,610 acres would be retained. Disposal and acquisition actions would be the same as described in Alternative B.

The authorized grazing use of 28,008 AUMs would be increased to 29,020 AUMs through implementation of rangeland improvements and vegetative land treatments. Wildlife would receive 330 AUMs.

Vegetative land treatments would be implemented on 227,550 acres of public land in the East Socorro Grazing ES and Chupadera Mesa areas. Target species would be similar to those described in Alternative B.

Approximately 1,520,610 acres of the SRA would be designated as "open" to motor vehicle use. Emergency closures would be utilized as needed.

Access plans would be developed on accommodating resource, production-oriented programs.

Five SMAs, totaling 66,467 acres, would be implemented. The area identified as Divide Tin SMA would be managed to promote mineral exploration.

All wild horses in the SRA would be removed and made available for adoption.

Approximately 27,640 acres of Federal lands would be carried forward for further coal leasing consideration.

Fluid leasing stipulations would be applied minimally, and emphasis would be on production of fluid minerals. Stipulations would be applied to 787,550 acres of public lands.

One hundred and sixty acres would be closed to right-of-way development and 14,920 acres of public land would be restricted. Corridors would be eliminated.

TABLE S-1: SUMMARY OF ANTICIPATED IMPACTS

Issues: (1) Land Ownership Adjustments (2) Vegetative Uses (3) Off-Road Vehicle Use (ORV), (4) Transportation/Access, (5) Special Management Areas (SMA), (6) Wild Horse Management (7) Coal Leasing Suitability/Assessment Management Concerns: (FL) Fluid Leasing, (ROW) Right-of-Way Avoidance/Exclusion

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
<b>MINERALS</b>				
The continuing management actions which have potentially significant impacts on mineral resources are primarily rights-of-way withdrawal petitioned for by non-BLM agencies, land-use authorization, and public purposes patents.	Issues having no impact: 2, 3, 4, and 6.	Issues having no impact: 2, 3, and 6.	Issues having no impact: impact: 2, 3, and 6.	Issues having no impact: 2, 3, and 6.
All other continuing management action impacts are mitigated.	(1) Disposal of surface and/or subsurface Federal estate could remove up to 32,800 acres from FL potential areas, 22,000 acres from coal potential areas, and 4,500 acres from saleable mineral potential areas, thereby proportionately reducing Federal leasing and royalty revenue potential from these areas.	(1) Disposal of surface and/or subsurface Federal estate could remove up to 428,900 acres from FL potential areas, 69,000 acres from coal potential areas, and 13,500 acres from saleable mineral potential areas, thereby proportionately reducing Federal leasing and royalty revenue potential from these areas.	(1) Disposal of surface and/or subsurface Federal estate could remove up to 273,600 acres from FL potential areas, 34,000 acres from coal potential areas, and 9,900 acres from saleable minerals potential areas, thereby proportionately reducing Federal leasing and royalty revenue potential from these areas.	Disposal of surface and/or subsurface Federal estate could remove up to 671,400 acres from fluid leasing potential areas, 22,000 acres from coal potential areas, and 46,000 acres from saleable mineral potential areas, thereby proportionately reducing Federal leasing and royalty revenue potential from these areas.
	Disposal of surface and/or subsurface Federal estate could impact up to 10,700 acres of land with locatable minerals potential.	Disposal of surface and/or subsurface Federal estate could impact up to 264,600 acres of land with locatable minerals potential.	Disposal of surface and/or subsurface Federal estate could impact up to 231,500 acres of land with locatable minerals potential.	Disposal of surface and/or subsurface Federal estate could impact up to 355,600 acres of land with locatable minerals potential.
	(5) The Tinajas ACEC prescriptions contain a 200-acre mineral entry withdrawal and a 1,280-acre ACEC designation, thus restricting mineral resource developments.	(4) The acquisition of legal access would benefit FL and development and locatable minerals development.	(4) Same as Alternative B.	(4) Same as Alternative B.
			(5) Same as Alternative B.	(5) Two SMAs could negatively impact FL and locatable mineral development to a small degree.
			(7) Under this alternative, 26,460 acres would be brought forward for further	



TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	<p>(7) Under this alternative, no lands would be brought forth for further consideration for coal leasing.</p> <p><u>Management Concerns</u> (FL) Fluid leasing would be restricted on 38 percent of the Federal mineral estate administered by the SRA.</p> <p>(ROW) No impact.</p>	<p>(5) The designation of SMAs and ACECs under this alternative would negatively impact fluid leasing and locatable minerals development.</p> <p>(7) Under this alternative 27,640 acres would be brought forward for further consideration for future leasing.</p> <p><u>Management Concerns</u> (FL) Fluid leasing would be restricted on 44 percent and excluded on 3 percent of the Federal mineral estate administered by the SRA.</p> <p>(ROW) The right-of-way exclusion areas in Catron County would hinder development of the fluid mineral resource.</p>	<p>consideration for future leasing.</p> <p><u>Management Concerns</u> (FL) Fluid leasing would be restricted on 44 percent and excluded on 3 percent of the Federal mineral estate administered by the SRA.</p> <p>(ROW) No impact.</p>	<p>(7) Under this alternative, 27,640 acres would be brought forward for further consideration for future leasing.</p> <p><u>Management Concerns</u> (FL) Fluid leasing would be restricted on 23 percent of the Federal mineral estate administered by the SRA.</p> <p>(ROW) No impact.</p>
	<p><u>Management Concerns</u> (FL) Fluid leasing would be restricted on 40 percent of the Federal mineral estate administered by the SRA.</p> <p>(ROW) No impact.</p>	<p><u>Management Concerns</u> (FL) Fluid leasing would be restricted on 40 percent of the Federal mineral estate administered by the SRA.</p> <p>(ROW) No impact.</p>	<p>Issues having no impact: 4 and 6.</p> <p>(1) Land disposals would result in losses of 15,050 AUMs and grazing fee revenues totalling \$20,310 per year.</p>	<p>Issues having no impact: 4.</p> <p>(1) Land disposals would result in losses of 34,650 AUMs and grazing fee revenues totalling \$46,780 per year.</p>
<b>RANGELAND</b>				
Rangeland improvements will continue to have a short-term negative impact on approximately 35 acres per year with improved conditions in the long term.	<p>Issues having no impact: 4, 5, 6, and 7.</p> <p>(1) Land disposals would result in losses of 9,230 AUMs and grazing fee revenues totalling \$12,460 per year.</p>	<p>Issues having no impact: 4 and 6.</p> <p>(1) Land disposals would result in losses of 15,050 AUMs and grazing fee revenues totalling \$20,310 per year.</p>	<p>Issues having no impact: 4.</p> <p>(1) Land disposals would result in losses of 5,855 AUMs and grazing fee revenues totalling \$7,900 per year.</p>	<p>Issues having no impact: 4.</p> <p>(1) Land disposals would result in losses of 34,650 AUMs and grazing fee revenues totalling \$46,780 per year.</p>

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
Vegetative land treatments will continue to have a positive impact on approximately 3,000 acres per year.	<p>(2) The initial construction of rangeland improvements causes short-term impacts to the vegetative resource; however, in the long term an improvement in the ecological condition is expected as a result of the lands being more adequately managed.</p> <p>Vegetative manipulations would occur in some areas for wildlife and livestock management purposes, but only after completing site-specific environmental assessments (EA).</p> <p>Chupadera Mesa Area:</p> <ul style="list-style-type: none"> <li>- Ecological conditions would improve slightly.</li> <li>- Increase 560 AUMs over long term.</li> <li>- 15,000 acres would remain in fair or poor ecological condition.</li> </ul> <p>ORV use would be limited to existing roads and trails on 936,500 acres and open to ORV use on 479,070 acres. Impacts to vegetation use</p>	<p>(2) Vegetative land treatments would improve the vegetation resource on 164,100 acres (80,000 in the East Socorro ES area, 80,000 in the Nogal HMP area, 4,100 in Chupadera Mesa Area.</p> <p>Chupadera Mesa Area:</p> <ul style="list-style-type: none"> <li>- Ecological condition would improve at a faster rate in areas treated with herbicides.</li> <li>- Increase of 2,270 AUMs due to management and vegetative land treatments.</li> </ul> <p>(3) ORV use would be limited to existing roads and trails on 668,200 acres, seasonally limited on 67,400 acres, and open on 679,970 acres. Impacts to vegetation are similar to Alternative A.</p> <p>(5) SMA prescriptions would result in a loss of 10 AUMs for livestock.</p> <p>(7) Coal mining activity expected to negatively</p>	<p>(2) Vegetative land treatments would improve the vegetation resource on 227,550 acres (140,000 in the East Socorro ES Area, 80,000 in the Nogal HMP Area, and 7,550 in Chupadera Mesa).</p> <p>Chupadera Mesa Area:</p> <ul style="list-style-type: none"> <li>- Ecological condition would improve.</li> <li>- Short-term reduction of 2,500 AUMs; adverse impact to permittees.</li> <li>- Long-term increase of 1,590 AUMs from management and vegetative land treatments.</li> </ul> <p>(3) ORV use would be limited to existing roads and trails on 581,570 acres and open on 585,700 acres. Impacts to vegetation are similar to Alternative A.</p> <p>(5) Same as Alternative B.</p> <p>(6) The 2,148 AUMs for livestock would be allocated to increase the wild horse herd. This would adversely impact the permittee.</p>	<p>(2) Vegetative land treatments would improve the vegetation resource on 227,550 acres (140,000 in the East Socorro ES Area, 80,000 in the Nogal HMP Area, and 7,550 in Chupadera Mesa).</p> <p>Chupadera Mesa Area:</p> <ul style="list-style-type: none"> <li>- Ecological condition would improve at a faster rate in areas treated with herbicides.</li> <li>- Increase of 3,250 AUMs due to management and vegetative land treatments.</li> </ul> <p>(3) Designating most of the SRA "open" (1,501,090 acres) to ORV use would result in similar impacts to vegetation as those in Alternative A. Areas being impacted most would be those nearest to towns and cities.</p> <p>(5) Rangeland could be impacted if mining occurs within the Divide Tin SMA. T&amp;E plant habitat is likely to deteriorate.</p>

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	include loss of vigor and production and a decline in ecological condition on areas of heavy use.	impact 5,800 acres resulting in a loss of 1,440 AUMs of livestock forage.	(7) Coal mining activities expected to negatively impact 4,460 acres resulting in a loss of 1,110 AUMs of livestock forage.	(6) 384 additional AUMs would be available for livestock and wildlife.  (7) Same as Alternative B.
	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	<u>Management Concerns</u> (FL) and (ROW) Increased activity could damage the vegetation in the short term.
<b>WILD HORSES</b>				
The surface disturbing activities listed in Table 4-1 would have little or no impact on wild horses.	Issues having no impact: 2, 4, 5, and 7.  (1) There would be no opportunity to acquire non-public lands within the WHMA. This would negatively impact BLM's ability to properly manage the wild horse herd.  (3) ORV use could increase harassment of the wild horses in the WHMA.	Issues having no impact: 2, 4, 5, and 7.  (1) Approximately 2,700 acres of non-public land could be acquired under this alternative to "block up" the lands and improve the manageability of the herd.  (3) Same as Alternative A.	Issues having no impact: 2, 4, 5, and 7.  (1) Same as Alternative B.  (3) Same as Alternative A.  (6) Wild horses would increase to 179 head (the full capacity of the WHMA). This would reduce or eliminate inbreeding within the horse herd.	Issues having no impact: impact: 1, 2, 3, 4, 5, and 7.  (6) All wild horses would be removed and made available for adoption. There would be no horse herd.  <u>Management Concerns</u> (FL) No impact.  (ROW) No impact.
Horses would continue to be water trapped at the horse corral to maintain specific management numbers.	(6) Wild horses would be managed at the current level of 32 head. This would cause continued inbreeding of the horse herd.	(6) Same as Alternative A except the horse herd would be managed at 50 head, with selective removal and introduction of new bloodlines.	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	
	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.		



TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
<b>LANDS</b>				
The cumulative effects of the surface disturbing actions listed in Table 4-1 may impact potential future disposal actions by either increasing or decreasing land values.	<p>Issues having no impact: 2, 5, 6, and 7.</p> <p>(1) The disposal of 61,670 acres of public lands would result in the following negative impacts: loss of resource values, loss of Federal revenue, increased disposal processing cost, and potential local economic strains. The positive impacts of these disposal actions would be the potential for placing lands into a higher use, increased Federal revenues from land sales, decreases in Federal management cost, potential increase in local property taxes, could relieve users from user fees, additional land could be available for residential development and disposal could provide opportunities for ranchers to increase and block their private lands.</p> <p>The acquisition of 34,650 acres of nonpublic lands would result in the following positive impacts: increased resource values, could pro-</p>	<p>Issues having no impact: 2, 3, 4, 6, and 7.</p> <p>(1) Same as Alternative A except disposal acreage is 100,320 acres and acquisition acreage is 81,200 acres.</p> <p>(5) Under this alternative prescriptions for SMAs include proposed acquisition of 81,200 acres.</p> <p><u>Management Concerns</u> (FL) Would increase BLM's workload in processing various realty actions.</p> <p>(ROW) Under this alternative 15,080 acres would be excluded from future rights-of-way development and another 383,752 acres would be subject to restrictions of some type.</p>	<p>Issues having no impact: 2, 4, 6, and 7.</p> <p>(1) Same as Alternative A except disposal acreage is 39,040 acres and acquisition acreage is 51,500 acres.</p> <p>(3) Rights-of-way placement may be more difficult on the 248,300 acres closed to ORV use and the 581,540 acres designated limited to existing roads and trails.</p> <p>(5) SMA prescriptions include proposed acquisition of 51,500 acres.</p> <p><u>Management Concerns</u> (FL) No impacts.</p> <p>(ROW) Rights-of-way would be excluded on 398,832 acres and avoided on another 14,740 acres of critical watersheds.</p>	<p>Issues having no impact: 2, 4, 6, and 7.</p> <p>(1) Same as Alternative A except the disposal actions is 231,000 acres and acquisition acreage is 40,280 acres.</p> <p>(3) Land-use authorizations would be less restrictive in that the entire SRA would be open to ORV use.</p> <p>(5) Only Divide Tin SMA would contain land acquisition actions.</p> <p><u>Management Concerns</u> (FL) No impacts.</p> <p>(ROW) Rights-of-way would be excluded on 120 acres and avoided on another 14,920 acres. The rest of the SRA would be open to ROWs.</p>

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	vide improved access, improved manageability of public lands, and decreased costs.			
	The negative impacts of these acquisition actions would be the potential displacement of authorized users and increased acquisition processing costs which could adversely affect local tax bases.			
	(3) Rights-of-way placement may be more difficult on the eastern side of the SRA due to public land being designated as limited to existing roads and trails.			
	(4) Access acquisition would continue on a case-by-case basis.			
	<u>Management Concerns</u> (FL) No impact. (ROW) No impact.			
<b>FORESTRY</b>				
Some of the actions listed in Table 2-1 could impact the forestry resource.	Issues having no impacts: 2, 3, 5, 6, and 7.	Issues having no impacts: 3 and 6.	Issues having no impacts: 3 and 6.	Issues having no impact: 3, 5, and 6.
The total acreages of the positive and	(1) Limited disposal and acquisition of lands could affect the forestry resource depending on the	(1) The disposal of 100,320 acres (if the lands support forest or woodlands) would	(1) Same as Alternative B except 39,040 acres are identified for disposal and 51,500 acres are	(1) Same as Alternative B except 231,000 acres are identified for disposal and 40,280 acres

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
negative impacts from these actions is estimated at 1,216 acres.	<p>vegetation present on the land.</p> <p>(4) Additional access supports the forestry and woodlands program but loss of access would be detrimental to the program.</p> <p><u>Management Concerns</u> (FL) Fluid leasing could impact the forestry resource. If production occurs, efforts should be taken to minimize, protect, or salvage the vegetative material.</p> <p>(ROW) An unknown acreage of the forestry resource would be subject to increased destruction as a result of various types of ROWs.</p>	<p>reduce the acres available for management. If the lands acquired (81,200 acres) have forest or woodlands growing on them, it would increase the acres available for management.</p> <p>(2) Vegetative land treatment could negatively affect the forestry resource if the treatments are conducted in the pinyon-juniper woodlands.</p> <p>(4) Same as Alternative A.</p> <p>(5) 78,070 acres of forestry resource would be negatively impacted by closing these areas to woodcutting and/or plant sales and limiting wildfire suppression.</p> <p>(7) Some forest or woodland areas could be negatively impacted in the long term by carrying forward 27,640 acres within the high potential coal area for further consideration for future leasing.</p>	<p>identified for acquisition.</p> <p>(2) Same as Alternative B.</p> <p>(4) Same as Alternative A.</p> <p>(7) Same as Alternative B except identified acreage is 27,640 acres.</p> <p><u>Management Concerns</u> (FL) Same as Alternative B.</p> <p>(ROW) Same as Alternative B except identified acreage is 15,080.</p>	<p>are identified for acquisition.</p> <p>(2) Same as Alternative B.</p> <p>(4) Same as Alternative A.</p> <p>(7) Same as Alternative B except identified acreage is 27,640 acres.</p> <p><u>Management Concerns</u> (FL) Same as Alternative B.</p> <p>(ROW) Same as Alternative B except identified acreage is 15,080.</p>



TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
		Management Concerns (FL) Same as Alternative A during the short term but to a smaller degree in the long term due to new stipulations becoming effective on new leases.		
		(ROW) Under this alternative 398,792 acres would be protected.		
	Issues having no impact: 4, 5, 6, and 7.	Issues having no impact: 6.	Issues having no impact: 6.	Issues having no impact: 6.
	(1) 61,670 acres of land could be transferred from BLM administration. This could result in increased sediment and salt loads if watershed projects located on these lands are not maintained.	(1) 100,320 acres of land be transferred from BLM administration. This could result in increased sediment and salt loads if watershed projects located on these lands are not maintained.	(1) Same as Alternative B except 39,040 acres are identified for disposal and 51,500 acres are identified for acquisition.	(1) Same as Alternative B except 231,000 acres are identified for disposal and 40,280 acres are identified for acquisition.
	(2) Continued present vegetative uses within the Chupadera Mesa Area would not change the pattern of erosion and sedimentation in drainage bottoms and flats.	The acquisition of 81,200 acres of nonpublic lands would allow BLM to apply reclamation measures to these lands to benefit watersheds involved.	(2) Same as Alternative B except identified acreage is 202,820 acres.	(2) Same as Alternative B except the acreage is 247,550.
	(3) Open ORV use in critical watersheds would accelerate erosion.	(2) Over the long term soil erosion, gully establishment, and the soil and sediment yields could be reduced on 184,170 acres.	(3) Limiting ORV use on 581,570 acres and closing 248,300 acres to ORV use would reduce soil erosion and limit establishment of new gullies.	(3) Open ORV use on 1,501,090 acres would reduce soil productivity and increase erosion and gully development.
			(4) Limiting legal access acquisition to existing improperly located access roads could result in	(4) Acquiring legal access into inaccessible lands or where only physical access existed would have minimal impacts to the soils/water
<b>SOILS/WATER RESOURCES</b>				
Of the surface disturbing actions listed in Table 4-1 an estimated 3,409 acres per year of soils/water resources will be impacted.				

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	<p><u>Management Concerns</u></p> <p>(FL) Fluid leasing and production could impact between 3,200 acres and 50,000 acres of the soils/water resource. These impacts would consist of: soil compaction, soil destruction, decreased fertility and increased wind and water erosion.</p> <p>(ROW) Same as CMG.</p>	<p>(3) Limiting ORV use on 668,200 acres and closing 36 miles of unnecessary roads would reduce soil erosion and gully establishment.</p> <p>(4) Acquiring access into presently inaccessible lands or areas would provide opportunities in some critical areas for more intensive management. If coupled with closing and rehabilitating undersirable routes, would reduce or stabilize treated areas.</p> <p>(5) 286,070 acres would be protected from most or all surface disturbing activities.</p> <p>(7) Soils/water resources could be negatively impacted in the long term from carrying forward 27,640 acres within the high potential coal area for further consideration for future leasing.</p>	<p>increased erosion and gully development.</p> <p>(5) Same as Alternative B.</p> <p>(7) Same as Alternative B except acreage is 26,460 acres.</p> <p><u>Management Concerns</u></p> <p>(FL) Same as Alternative B.</p> <p>(ROW) Same as Alternative B except acreage is 413,572 acres.</p>	<p>resources. The low priority of closing and reclaiming existing undersirable routes would result in increased soil loss and gully erosion.</p> <p>(5) 286,070 acres of soils and water resources would be subject to impact due to a lack of adequate protection.</p> <p>(7) Same as Alternative B except the acreage is 27,640.</p> <p><u>Management Concerns</u></p> <p>(FL) Same as Alternative A except the impacts are on portions of approximately 1.5 million acres.</p> <p>(ROW) Direct and indirect impacts on the soils/water resources including 118,000 acres of critical watersheds would be increased. This could result in severe erosion over the long term.</p>

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
		<u>Management Concerns</u> (FL) Same as Alternative A except greatly reduced due to protective stipulations within SMAs.  (ROW) Direct and indirect impacts would be reduced on 398,792 acres.		
<b>AIR QUALITY</b>				
There is no overwhelming impact to air quality as a result of continuing management actions.	Issues having no impact: 1, 2, 3, 4, 5, 6, and 7.  <u>Management Concerns</u> (FL) No impacts.  (ROW) No impacts.	Issues having no impact: 1, 2, 3, 4, 5, 6, and 7.  <u>Management Concerns</u> (FL) No impacts.  (ROW) No impacts.	Issues having no impact: 1, 2, 3, 4, 5, 6, and 7.  <u>Management Concerns</u> (FL) No impacts.  (ROW) No impacts.	Issues having no impact: 1, 2, 3, 4, 5, 6, and 7.  <u>Management Concerns</u> (FL) No impacts.  (ROW) No impacts.
<b>WILDLIFE</b>				
Every action listed in Table 2-1 will impact the wildlife resource to some degree.	Issues having no impact: 4, 5, 6, and 7.  (1) Acquisition of valuable habitats would be limited.  (2) Insufficient forage is allocated to the wildlife resource on Chupadera Mesa. An additional 300 AUMs are needed to support the existing wildlife population.	Issues having no impact: 7.  (1) The acquisition of 81,200 acres of nonpublic lands could be beneficial if high quality habitat is obtained.  (2) Vegetative land treatments would impact approximately 165,000 acres with 80,000 acres identified specifically for wildlife habitat improvement.	Issues having no impact: 7.  (1) The acquisition of 51,500 acres of nonpublic lands could be beneficial if high quality habitat is obtained.  (2) Vegetative land treatments would positively impact approximately 81,550 acres of wildlife habitat.	Issues having no impact: 7.  (1) The acquisition of 40,280 acres of nonpublic lands could be beneficial if high quality habitat is obtained.  (2) Vegetative land treatments totalling approximately 227,000 acres would impact wildlife. Of this total approximately 80,000 acres are specifically identified for wildlife habitat improvement.
The total acreage of the positive and negative impacts is 4,829 acres per year.				
	Vegetative manipulations would occur in some areas for wildlife and livestock		Reduction in livestock grazing of 2,500 AUMs would increase available forage	



TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	management purposes, but only after completing site-specific EAs.	Authorized grazing use would be increased by 2,270 AUMs which would be allocated first to wildlife and then to livestock and watershed.	for wild ungulates and would increase cover for small mammal and bird species.	The increase in the live-stock grazing use authorization of 2,920 AUMs would result in increased competition for habitat and available forage between live-stock and wildlife.
(3) Continued degradation of habitat privacy and increased poaching and destruction of habitat would result.		(3) ORV use would be limited to existing roads and trails on 668,200 acres and seasonally limited to existing roads and trails on an additional 67,400 acres. These limitations would reduce wildlife harassment, improve habitat privacy, and decrease soil and vegetation disturbance within the wildlife use areas.	(3) Limiting ORV use to existing roads and trails and/or closing certain SMAs on 829,840 acres would reduce wildlife harassment, improve habitat privacy throughout the SMA.	(3) Designating most of the SRA "open" (1,501,000 acres) to ORV travel would result in a deterioration in habitat privacy and harassment to wildlife would increase. As a result, habitats could be greatly reduced in size or made completely unusable.
<u>Management Concerns</u>				
(FL) Fluid leasing could negatively impact 7,000 acres of bald eagle habitat, 8,700 acres of pronghorn habitat, 1,100 acres of raptor habitat, and 11,050 acres of potential bighorn sheep habitat.		(4) As physical and legal access is expanded into previously inaccessible areas habitat privacy would deteriorate and harassment to wildlife would increase, resulting in the existing usable habitat being greatly reduced in size and/or made completely unusable for wildlife.	(5) Same as Alternative B.	(4) As physical access is increased in SRA existing usable habitats would be reduced in size and/or completely unusable for wildlife.
(ROW) An unknown acreage of wildlife habitat would be impacted as a result of various types of ROWs.		(5) SMAs totalling 286,000 acres would provide for habitat protection and improvement.	(6) Wild horses would increase to 170 head. This would result in increased competition for habitat and available forage between wild horses and wildlife.	(5) 165,800 acres of wildlife habitat would be subjected to a lack of adequate protection.
			<u>Management Concerns</u> (FL) Same as Alternative B.	(6) The elimination of the wild horse herd could have a positive impact on wildlife, if the existing 384 AUMs which is currently allocated

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
		(6) Wild horses would increase to 50 head. This would result in increased competition for habitat and available forage between wild horses and wildlife.		for the horses is not reallocated. If the 384 AUMs are reallocated to livestock, increased competition for habitat and available forage would occur between livestock and wildlife.
		<u>Management Concerns</u> (FL) Same as Alternative A during the short term. Acres would be reduced as the new FL stipulations become effective with new leases in the long term. (ROW) 15,080 acres of important wildlife habitat would be excluded from any future ROWs and 383,752 acres would be identified as avoidance areas for future ROWs.		<u>Management Concerns</u> (FL) Under this alternative FL could negatively impact 283,000 acres of valuable wildlife habitat.  (ROW) Wildlife habitat totalling 1,520,610 acres could be subject to increased degradation of habitat privacy and habitat destruction as a result of various types of ROWs.
<u>CULTURAL RESOURCES</u> Fencing of archeological sites for protection may involve an average of 2 actions per year, with about 40 acres per year excluded from grazing. Site stabilization, utilizing imported, sterile fill, will	Issues having no impact: 4, 5, 6, and 7.  (1) Land disposal would be conducted in accordance with laws, regulations, and specific guidance designed to ensure no adverse impacts on cultural resources.	Issues having no impact: 6.  (1) Same as Alternative A.  (2) Same as Alternative A.  (3) About half of the SRA would be designated "open" and about half "limited to existing roads and trails".	Issues having no impact: 6.  (1) Same as Alternative A.  (2) Same as Alternative A.  (3) ORV limitations and closures should reduce random disturbance of sites through inadvertent tire	Issues having no impact: 4, 5, and 6.  (1) Same as Alternative A.  (2) As livestock grazing is maximized negative impacts to cultural resources could be expected to increase proportionately from

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
require gravel sources, which may disturb an average of 1 acre per year.	Acquisition of nonpublic lands containing significant cultural sites would have a positive impact on the cultural resource.	The latter is preferred for resource protection, but this can also make legitimate scientific excavation of remote sites impossible. See Alternative A impacts also.	damage, and reduce vandalism by limiting access to remote sites.	trampling and disturbance of features.
Actions and activities of other BLM programs which are common to all alternatives shall be conducted in accordance with all laws, regulations, and guidelines to result in no effect or no adverse effect upon cultural resources.	(2) Specific impacts from livestock grazing on the cultural resource are unknown at present.  (3) Cultural resource damage would occur to sites from ORV use; however, to what extent is unknown.	(4) Access to important public interpretative archeological sites would be pursued, which could be beneficial to the goals of the cultural resource program.	(4) Same as Alternative B.  (5) Same as Alternative B except some of the more important presently known cultural localities in the SRA would also be more adequately protected.	(3) Cultural resource damage would increase as a result of inadequate protection from ORV use.  (7) Same as Alternative B.
	Management Concerns (FL) Will be conducted in accordance with laws and regulations to result in no adverse effect.	(5) Ten proposed SMAs contain management prescriptions to enhance and protect cultural values of various sites.	(7) 1,340 acres of the cultural resources would be limited and subject to special mitigation considerations.	Management Concerns (FL) Cultural resource preservation would be limited and mitigation emphasized.
	(ROW) Same as (FL) above.	(7) Coal leasing would go forward for the area of high development potential. Locations identified under the cultural resource screen would be mitigated.	Management Concerns (FL) Same as Alternative B.	(ROW) Cultural resource preservation would be limited and mitigation emphasized.
		Management Concerns (FL) Fluid leasing would incorporate special stipulations which afford an added measure of protection for cultural sites.		



TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
		(ROW) Limitations and exclusions of ROWs in cultural SMAs would benefit the cultural resource.		
<b>PALEONTOLOGY</b>				
Most BLM programs generally produce no adverse effects on the paleontological resources.	Issues having no impact: 1, 2, 3, 4, 5, 6, and 7.  <u>Management Concerns</u> (FL) No impact.	Issues having no impact: impact: 1, 2, 3, 4, 5, and 6.  (7) Coal leasing would occur in the high potential area. This could result in a short-term positive impact on the basis of information recovered through study.  <u>Management Concerns</u> (FL) No impact.	Issues having no impact: 2, 3, 4, 5, and 6.  (1) The most limited disposal of land would occur, which would help minimize the inadvertent loss of significant fossil resources.	Issues having no impact: 2, 4, 5, and 6.  (1) The sale or exchange of public lands could result in huge losses of presently undiscovered paleontological resources.
Activities undertaken by the paleontology program involve the issuance of permits for scientific investigation. Disturbance from these investigations have historically been measured in a few cubic feet per year, rather than acres. It is estimated that over the life of this plan, disturbance resulting from the paleontology program will be negligible.	(ROW) No impact.	<u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	(7) Coal leasing would occur only in the larger high potential area with the same impact as in Alternative B.  <u>Management Concerns</u> (FL) No impact.  (ROW) No impact.	(3) Designating the public lands "open" to ORV use could negatively impact the paleontological resources.  (7) There could be a short-term positive effect on the paleontological resource, as a result of data recovery, by allowing coal tracts to be leased and mined.  <u>Management Concerns</u> (FL) No impact.  (ROW) No impact.

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
<b>RECREATION/OFF-ROAD VEHICLES</b>				
Assuming the worst case analysis for Table 4-1, an estimated 4,829 acres per year or 96,580 acres would be impacted by various surface disturbing activities.	Issues having no impact: 6 and 7.  (1) Consolidation of important recreational areas would be limited and these resources would continue to be degraded due to manageability problems.  (2) Popular recreation sites would continue to contain conflicts with cattle, degrading the recreational resource.  (3) Existing ORV designations would continue to be unmanageable and would not protect valuable resources.  (4) Access acquisition would continue on an as-needed, case-by-case basis. Many areas could provide additional recreational opportunities if access was obtained.	Issues having no impact: 2, 6, and 7.  (1) Acquisition of 81,200 acres would benefit recreation management and provide additional land with high value recreation resources.  (3) 785,010 acres would be designated open, 668,200 acres be limited to existing roads and trails, 67,400 acres would be limited seasonally (November-March), and 36 miles of trails would be closed (except for administrative and permitted uses). These actions would protect the recreational resources in the SRA.  (4) The need to provide recreational access would be satisfied in this alternative.	Issues having no impact: 2, 6, and 7.  (1) Same as Alternative B except identified acreage is 51,500 acres.  (3) 690,740 acres would be designated open, 581,570 acres would be limited to existing roads and trails, and 248,300 acres would be closed to ORV use (except for administrative and permitted uses). These designations would enhance the recreational resources within the SRA.  (5) Same as Alternative B except the degree of protection afforded SMAs would be greater in this alternative than in Alternative B.  Management Concerns (FL) No impact.	Issues having no impact: 2, 6, and 7.  (1) Recreational opportunities would be lost on 231,000 acres identified for disposal. There would be no recreational related acquisitions.  (3) The entire SRA would be designated open to ORV use, resulting in increased resource damage and user conflicts.  (4) Obtaining access to popular recreational areas would not occur.  (5) A total of 66,467 acres of recreational resources would be protected. Recreational opportunities on 281,733 acres would be degraded.  Management Concerns (FL) No impact.

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	(5) Nine recreation-related areas totalling 186,590 acres would lack adequate protection to preserve valuable recreational resources.	(5) Thirteen recreation related SMAs totalling 188,200 acres would be managed to protect and enhance their recreational resources.	(ROW) A total of 13 recreation-related SMAs would be excluded from new ROW development.	(ROW) Recreation opportunities in the SRA would be degraded due to a lack of adequate protection from ROW development over the long-term.
	<u>Management Concerns</u> (FL) No impact.	<u>Management Concerns</u> (FL) If extensive exploration and production occurs, high quality recreational resources would be degraded.		
	(ROW) Continued utilization of existing ROWs corridors could degrade high valued recreational resources.			
		(ROW) A total of 13 recreation-related SMAs would be avoided when new ROWs are established.		
<u>VISUAL RESOURCES</u>				
Assuming the worst case analysis for Table 4-1, an estimate of 4,829 acres per year or 98,580 acres would be impacted by various surface disturbing activities.	Issues having no impact: 1, 6, and 7.  (2) Continuing current vegetative uses would continue to lower scenic quality in Class A VRM areas.  (3) ORV use would shift visual resources from high scenic quality rating of A or B to a lower scenic	Issues having no impact: 2, 4, 6, and 7.  (1) Land ownership adjustments would enhance management of SMAs and protect areas with high scenic qualities.  (3) ORV designations would protect scenic quality in VRM Class I and II areas by design-	Issues having no impact: impact: 2, 6, and 7.  (1) Land ownership adjustments would enhance scenic quality in SMAs, especially Sierra Ladron and Tinajas SMAs.  (3) Same as Alternative B except more protection would be provided for VRM Class I and Class II areas.	Issues having no impact: 1, 2, 6, and 7.  (3) "Open" designation for ORV use in the entire SRA would reduce the overall visual quality of Class I and II areas.  (4) Same as Alternative C.  (5) Tinajas ACEC, a Class I visual area, would be pro-



TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	<p>quality rating of C in some "open" areas.</p> <p>(4) Visual resources would continue to be degraded in areas where new access roads are developed over the long term.</p> <p>(5) 342,663 acres would lack adequate protection to preserve visual resource values.</p> <p><u>Management Concerns</u> (FL) No impact.</p> <p>(ROW) No impact.</p>	<p>nating them as limited to existing roads and trails or closing them to ORV use.</p> <p>(5) Limiting surface disturbing activities within SMAs would protect visual resources on approximately 249,620 acres of public land.</p> <p><u>Management Concerns</u> (FL) Fluid leasing could negatively impact visual resource in some SMAs and other areas such as VRM Class II areas outside SMAs.</p> <p>(ROW) Rights-of-way could impact VRM Class II lands if established in these areas. VRM Class I lands would be excluded from ROWs and therefore, protected.</p>	<p>(4) Same as Alternative A.</p> <p>(5) Same as Alternative B except more protection would be provided for SMAs.</p> <p><u>Management Concerns</u> (FL) No impacts.</p> <p>(ROW) Excluding ROWs in SMA and VRM Class I and II areas would protect the areas with the highest scenic quality.</p>	<p>ted. Other significant Class I and II areas would not be afforded protection in the long term.</p> <p><u>Management Concerns</u> (FL) Same as Alternative B.</p> <p>(ROW) Only the VRM Class I scenic areas would have adequate protection. Visual resources in other areas would degrade over the long term.</p>
<b>SOCIO-ECONOMICS CONDITIONS</b>				
The cumulative effects of the surface disturbing actions listed in Table 4-1 may impact potential future	<p>Issues having no impact: 3, 4, and 6.</p> <p>(1) Approximately 61,670 acres could be disposed of.</p>	<p>Issues having no impact: 3, 4, and 6.</p> <p>(1) Approximately 100,320 acres could be disposed of.</p>	<p>Issues having no impact: 3, 4, and 6.</p> <p>(1) Approximately 39,040 acres could be disposed of.</p>	<p>Issues having no impact: 3, 4, and 6.</p> <p>(1) Approximately 231,000 acres could be disposed of.</p>

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

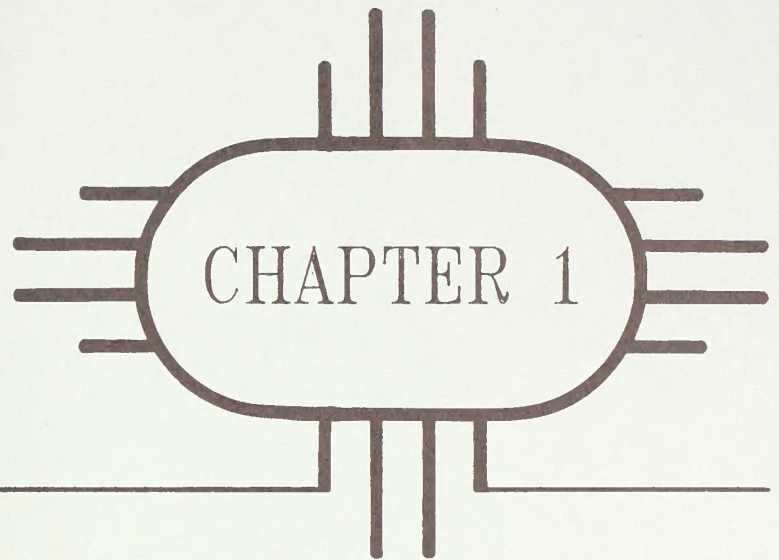
Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
disposal actions in both positive and negative ways.	This could result in reductions in revenues of approximately \$2,200 annually.	This could result in reductions in revenues of approximately \$9,600 annually.	This could result in reductions in revenues of approximately \$6,954 annually.	This could result in reductions in revenues of approximately \$24,300 annually.
Road and utility development may increase the fair market values of some parcels of land.	(2) This issue could directly affect the employment of 77 people and indirectly affect the employment of up to 230 people either positively or negatively.	(2) Ranch receipts would increase by \$61,043. The additional 1,940 AUMs would increase the asset value of the affected livestock operators by approximately \$155,200.	(2) Ranch receipts would remain relatively stable. The reduction of 2,500 AUMs would decrease the asset value of the affected livestock operators by approximately \$200,000.	(2) Ranch receipts would increase by \$103,000. The additional 2,920 AUMs would increase the asset value of the affected livestock operators by approximately \$233,600.
Future surface disturbing actions will affect the social and economic well-being of some of the people residing within the SRA; yet since the exact magnitude and locations of these actions are not presently known, further analysis is not feasible.	(5) In the long term, scientific, educational, and historic resources would probably decline due to lack of adequate protection.  (7) Approximately 220 million tons of Federal coal would not be available for lease or development in the near future. This could increase utility costs during the short term.  Management Concerns (FL) Economic and political influences in the minerals and energy industry make rapid changes probable.	(5) Proposed SMAs would have positive social and economic impacts. Preservation of social values could in the long term result in increased recreational use and tourism.  (7) If coal production occurs, resulting in a 10-percent increase in employment for the SRA, a \$10,000,000 per year increase in wages would be expected.  Management Concerns (FL) Same as Alternative A. (ROW) No impact.	(5) Same as Alternative B.  (7) Same as Alternative B.  Management Concerns (FL) Same as Alternative A. (ROW) No impact.	(5) Same as Alternative B but on a reduced number of areas.  (7) Same as Alternative B.  Management Concerns (FL) Same as Alternative A. (ROW) No impact.

TABLE S-1 (Continued): SUMMARY OF ANTICIPATED IMPACTS

Continuing Management Guidance and Actions	Alternative A	Alternative B	Alternative C	Alternative D
	These changes can create impacts of both a social and economic nature on State and County revenues.			
	Rapid oil and gas development could result in positive impacts on revenues.			
	(ROW) No impact.			







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## PURPOSE AND NEED

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## PURPOSE AND NEED

The Socorro Resource Management Plan (RMP) has been prepared to provide a comprehensive framework for managing the public lands and for allocating resources during the next 10 to 20 years using the principles of multiple use and sustained yield. These two principles are defined in the Glossary. The RMP establishes areas for limited, restricted, or exclusive uses, levels of production, allowable resource uses, resource condition objectives, program constraints, and general management direction.

This document includes proposed RMP management alternatives and a draft Environmental Impact Statement (EIS), which fulfill the Federal Land Policy and Management Act (FLPMA) and the National Environmental Policy Act (NEPA) requirements for comprehensive land-use planning for public lands. Section 3(3A) of the Federal Coal Leasing Amendments Act of 1976 also requires comprehensive land-use planning prior to coal leasing. In addition, court-ordered and statutory requirements will be met upon final approval of two of the decisions proposed in this document. The first of these is the statutory requirement that public lands be designated as "open", "limited", or "closed" to off-road vehicle (ORV) use. This RMP/EIS also analyzes alternatives for livestock grazing on public lands as required by the court-ordered settlement of a 1973 lawsuit filed against the Bureau of Land Management (BLM) by the Natural Resources Defense Council. Plan amendments, if necessary, will keep the RMP current with resource management needs and policies.

Between 1976 and 1982, the Socorro Resource Area (SRA) prepared land-use plans, known as Management Framework Plans (MFP), for the majority of the public surface and minerals within its area of jurisdiction (see Appendix A for those decisions which are still valid and carried forward into this RMP). The only area that is not yet covered by an approved plan is the Chupadera Mesa area. These MFPs will continue to be implemented to the extent they are not in conflict with the direction proposed in this RMP.

## LOCATION AND DESCRIPTION OF THE PLANNING AREA

The SRA is located in the west-central portion of New Mexico. The SRA contains approximately 1,520,000 acres of public land and 2.2 million acres of Federal minerals (see map in the packet in the back of document). The lands are located in Socorro and Catron Counties. Generally, public lands are well blocked in the Quemado, Pelona Mountain, Ladron, and Stallion areas. However, in other large portions of the SRA public lands are isolated and scattered. Private lands are concentrated in the Rio Grande Valley, San Augustine Plains, Datil, and Bingham areas.

## PLANNING PROCESS

The BLM RMP process consists of nine basic steps. This process requires the use of an interdisciplinary team of resource specialists for the completion of each step. The steps described in the planning regulations and followed in preparing this RMP are summarized below and graphically displayed in Figure 1-1. Publication of this document is part of Step 7, selection of the preferred alternative.

### Step 1. Identification of Issues

The first step in the planning process is intended to identify resource management problems or conflicts that can be resolved through the planning process. These problems or conflicts (issues) were identified by the BLM and other agency personnel as well as members of the public. Seven issues were identified and considered in this document and are discussed in detail.

### Step 2. Development of Planning Criteria

During this step preliminary decisions are made regarding the kinds of information needed to clarify the issues, the kinds of alternatives to be developed, and the factors to be considered in evaluating alternatives

Figure 1-1





and selecting a preferred RMP/EIS. As each issue was identified, a list of planning criteria was developed to help guide the resolution of that issue. The planning criteria are listed after each issue.

### Step 3. Inventory Data and Information Collection

This step involves the collection of various kinds of environmental, social, economic, resource and institutional data needed for completion of the process. This step can include detailed field studies, literature studies or consultation with appropriate professionals. In most cases, this process is limited to inventories needed to address the issues.

### Step 4. Management Situation Analysis (MSA)

This step calls for deliberate assessment of the current situation. It includes a description of current BLM management guidance, a discussion of existing problems and opportunities for solving them, and a consolidation of existing data needed to analyze and resolve the identified issues. The end result of this step is the development of an unpublished companion document known as the MSA. Chapter 2 of that document is used to develop the Continuing Management Guidance and Actions section of the RMP. The MSA is used as a basis for compiling the Affected Environment chapter of the RMP. Copies of the MSA are available for review in the SRA office.

### Step 5. Formulation of Alternatives

During this step several complete, reasonable resource management alternatives are prepared, including one for no action and others that strive to resolve the issues while placing emphasis either on environmental protection or resource production. This important section of the RMP has been incorporated into Chapter 2.

### Step 6. Estimation of Effects of Alternatives

The physical, biological, economic, and social effects of implementing each alternative are estimated in order to allow for a comparative

evaluation of impacts. This step, known as the Environmental Consequences section, is Chapter 4 in this RMP.

### Step 7. Selection of the Preferred Alternative

Based on the information generated during Step 6, the District Manager identifies and recommends a preferred alternative to the State Director. The Draft RMP/EIS document is then prepared and distributed for public review. We are presently at this step in the planning process. It should be noted that Alternative B has been selected by management as the preferred alternative.

### Step 8. Selection of the Resource Management Plan

Based on the results of public review and comment, the District Manager will select and recommend to the State Director various proposals and/or alternatives to comprise the RMP and publish it along with a final EIS. A final decision is made after a 60-day Governor's Consistency Review and a 30-day protest period on the Final EIS are completed.

### Step 9. Monitoring and Evaluation

This step involves the collection and analysis of long-term resource condition and trend data to determine the effectiveness of the plan in resolving the identified issues, and to ensure that implementation of the plan is achieving the desired results. Monitoring continues from the time the RMP is adopted until changing conditions require a revision of the whole plan or any portion of it.

## **PLANNING ISSUES, CRITERIA, AND MANAGEMENT CONCERNS**

The BLM planning regulations [43 (Code of Federal Regulations) CFR 1600] equate land-use planning with problem solving and issue resolution. An issue is defined as an opportunity, conflict, or problem, regarding the use or management of public lands and resources.

Planning criteria are the standards, rules and measures used for data collection and



alternative formulation, which will guide final plan selection. Planning criteria are taken from appropriate laws and regulations, BLM Manuals and directives, and concerns expressed in meetings, and consultations, both with the public and other agencies.

Management concerns are those nonissue-related procedures or land-use allocations which have proven, during the preparation of this RMP/EIS, to need modification. Management concerns focus on use conflicts, requirements or conditions that cannot be resolved administratively and did not, during initial public scoping, appear to meet the criteria to qualify as a planning issue.

The following planning issues and their associated planning criteria were identified for resolution in the Socorro RMP.

#### Issue No. 1: Land Ownership Adjustments

To resolve this issue, an answer is needed to the following question:

On which lands should ownership be adjusted (retained, disposed and/or acquired) to facilitate more efficient management?

The planning criteria for this issue are:

- Public lands will not be disposed of if they provide access to large blocks of other Federal lands, unless access rights for the public can be reserved in the patent.
- Public lands identified for sale must be tracts which are not suitable for management by another Federal department or agency, tracts which are difficult and uneconomical for the BLM to manage or tracts which would best serve important public objectives through their disposal. Public lands may also be sold if they were acquired for a specific purpose and are no longer required for that or any other Federal purpose.
- Priority will be given to exchanging public lands identified for disposal for

non-Federal lands that have been identified for acquisition to enhance BLM programs.

- Public land will be retained under management by the BLM in the following priority:

(1) Public land that has unusual or historic, cultural, mineral, recreational, natural hazard, or scenic value; that represent natural systems or processes; and which has significance and special worth, consequence, meaning, distinctiveness, or cause for concern.

o Acquire where possible non-Federal lands located in SMAs that have high resource values or unique characteristics that would enhance management of the public land.

(2) Public land located in large blocks which does not require special management but should be retained due to the land ownership pattern and for multiple-use values.

o Improve land management potential by consolidating land ownership by exchange of public, State, and private lands. Only those parcels which will enhance overall consolidation of public land will be considered for exchange.

o In the retention area, public land will be considered for disposal for needed public purposes demonstrated by State and/or local municipalities, or to resolve unintentional unauthorized occupancy.

- Public land will be considered for disposal in the following priority:

(1) Entertaining State exchange applications for State land within the SRA.

(2) Public land to accommodate the demonstrated needs expressed by local, County, State governments, or individuals.

(3) Public land where size, location, or other physical characteristics make them difficult or uneconomical for BLM to manage.

(4) Public land which will resolve unintentional unauthorized occupancy.

- Public lands will not be disposed of if it would be contrary to State, County, or local land-use plans or zoning ordinances.
- Public lands will not be disposed of if it would significantly interfere with the development of mineral resources.

#### Issue No. 2: Vegetative Uses

To resolve this issue, answers are needed to the following questions:

What are the correct levels of vegetative use for livestock, wildlife, and watershed production/protection outside of the area covered by the East Socorro Grazing Environmental Statement (ES) and the West Socorro Rangeland Management Program EIS?

What sites are suitable for land or vegetative treatments throughout the SRA?

The planning criteria for this issue are to:

- Determine whether existing management categories need to be updated on allotments within the East Socorro Grazing ES and the West Socorro Rangeland Management Program EIS areas.
- Establish selective management categories [(M) Maintain, (I) Improve, or (C) Custodial] on the Chupadera Mesa allotments based on the recent range inventory information and other site-specific criteria (see Appendix C for categorization criteria).
- Ensure that the proper use level of the vegetation is not exceeded.
- Monitor the rangelands to evaluate the effectiveness of management actions and determine proper stocking levels.

- Improve or maintain ecological condition and vegetative productivity in the long term (10-20 years).

- Provide for the protection of wildlife habitat and the habitat of sensitive, State listed, and Federally listed threatened or endangered (T&E) plant species.

- Identify lands suitable for vegetative land treatments in accordance with the "Natural Resources Defense Council v. Morton" final judgment of June 18, 1975.

- Reduce runoff and soil erosion on public land by managing rangeland resources and allocating vegetation to provide for watershed protection needs.

- Identify changes or additional projects and rangeland management practices necessary to achieve resource management objectives.

#### Issue No. 3: Off-Road Vehicle Use

To resolve this issue, answers are needed to the following questions:

What public lands should be designated as "open, limited, or closed" to off-highway Vehicles/off-road Vehicles (OHV/ORV) use?

What special use areas should be designated for OHV/ORV use to meet specific user group and general public demand?

What OHV/ORV designations would result in minimum conflict between people and resources and in what areas?

The planning criteria to designate public land as "open", "limited", or "closed" to OHV/ORV use are to:

- Resolve conflicts between various users of public lands.
- Identify extreme natural or man-made hazards to human life or property.



- Protect significant cultural, historic, or natural features (i.e., visual resources, watersheds) which may be damaged.
- Eliminate harassment of wildlife or damage to significant wildlife habitat.
- Protect T&E species which may be adversely impacted.
- Ensure wilderness suitability of wilderness study areas (WSAs) are not impaired.

#### Issues No. 4: Access

To resolve this issue, answers are needed to the following questions:

What access to public lands should be acquired?

What transportation routes should be constructed, maintained, restricted to public use, or closed and rehabilitated?

The planning criteria for this issue are:

- Identify proposed roads needed for better management of public lands (through activity plans).
- Prioritize and provide public access to those areas of public land having significant resource values for which there is a high demand but insufficient legal or physical access.
- Identify those areas which are sensitive to or not suitable for the construction of new roads.
- Identify those roads which are unneeded and should be closed and rehabilitated for resource protection and public safety.

#### Issue No. 5: Special Management Areas

To resolve this issue, answers are needed to the following questions:

What areas and resource values should be identified for special management attention?

How should such areas and resource values be managed?

- Identify those areas that have unusual or historic, cultural, paleontological, vegetative, fish and wildlife, mineral, recreational, natural hazard, or scenic values that represent natural systems or processes.

These areas could have greater than local significance or special local worth, consequences, meaning, distinctiveness, or cause for concern and should be managed to protect these values.

#### Issues No. 6: Wild Horse Management

To resolve this issue, an answer would be needed for the following question:

What is the best course of action for BLM to take to manage the wild horse herd?

The planning criteria for this issue are:

- Provide cost effective management of the wild horse herd.
- Provide for the maintenance of a healthy viable breeding population with a balanced sex ratio and age class structure.

#### Issues No. 7: Coal Leasing Suitability Assessment

To resolve this issue, an answer is needed to the following question:

After application of the four land-use planning screens for coal, which lands should be carried forward for further consideration for coal leasing?

The planning criteria for this issue consists of the four coal screens listed below:

- Coal development potential will be used to identify areas acceptable for further consideration for leasing.



- The 20 unsuitability criteria specified by Federal regulations will be applied to identified lands to ensure environmental compatibility.
- Multiple land-use decisions may be made which will eliminate additional coal deposits from further consideration for leasing to protect other resource values of a locally important or unique nature not included in the unsuitability criteria.
- Qualified surface owner information will be used to obtain views on leasing Federal coal located under private surface.

The fluid leasing concern was a result of management feeling that there were too many existing lease stipulations and that they were redundant or not serving the purpose for which they were intended.

#### Management Concern: Fluid Leasing

To resolve the concern, answers are needed to the following questions:

Are the existing special oil, gas, and geothermal leasing stipulations accurate?

What are the proper special oil, gas, and geothermal leasing stipulations for public lands?

The planning criteria for this management concern is to apply special fluid leasing stipulations to public lands where resource values and uses cannot coexist with fluid leasing without more stringent environmental protection.

The right-of-way concern evolved as a result of management feeling that existing right-of-way corridors were not adequate to meet planning objectives.

#### Management Concern: Right-of-Way Exclusion and Avoidance Areas

To resolve the concern, answers are needed to the following question:

Which lands should be avoided and/or excluded for development of rights-of-way?

The planning criteria for this management concern is to:

- Identify areas where rights-of-way will be excluded from development.
- Identify areas where rights-of-way will be restricted by size and type to protect resource values on public lands.





## CHAPTER 2

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# PLAN ALTERNATIVES

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## INTRODUCTION

This chapter contains two sections, "Continuing Management Guidance and Actions" and "The Proposed Action and Alternatives." Continuing Management Guidance and Actions is a summary of how the Socorro Resource Area (SRA) is presently being managed. Those public lands, resources, and programs not affected by the resolution of the issues will be managed as outlined in this section. The Proposed Action and Alternatives is a description of the possible solutions to issue questions and management concerns. Each alternative presents a different blend and balance of resource allocations and uses. They are based on input from the Resource Management Plan (RMP) interdisciplinary team, other Bureau of Land Management (BLM) staff, and interested citizens.

All four alternatives comply with the Federal Land Policy and Management Act (FLPMA) requirement that the public land be managed for multiple use and sustained yield. Together with the Continuing Management Guidance and Actions, each of the alternatives forms a separate and feasible land-use plan. Table S-1 summarizes the impacts by alternative.

The alternatives in this RMP/Environmental Impact Statement (EIS) are designed to provide general management guidance. Specific projects for a given area or resource will be detailed in activity plans with accompanying environmental analyses. These activity plans will discuss more precisely how a particular area or resource will be managed, and will comply with the approved RMP's resolution of the issues and management concerns.

### CONTINUING MANAGEMENT GUIDANCE AND ACTIONS

This section describes the resource management guidance and actions that will continue to affect the SRA regardless of which RMP alternative is selected. It is based on detailed discussions of the "Existing Management Situation" section of the Management Situation Analysis (MSA), a companion document to the RMP/EIS.

Management guidance for resource programs include laws, Executive Orders, regulations, Department of the Interior manuals, BLM manuals and instruction memoranda [Washington,

New Mexico State Office (NMSO), and Las Cruces District Office]. Continuing management actions are an estimate of resource program allocations or uses that have the potential for affecting other resources when coupled with valid planning decisions found in the Divide, Stallion, and Ladron Management Framework Plans (MFP) (see Appendix A); these form the basis for the Continuing Management Guidance and Actions for public land resources and programs in the SRA. Table 2-1 displays the type, number and size of continuing actions per year for the 20-year life of the RMP.

Table 2-1  
Estimated Surface Disturbing Actions  
per Year for a 20-Year Period

Type of Action	Average No. of Actions	Size of Action/Ac
Seismic lines	5 to 10	2 to 10
Oil & Gas Exploration Wells	1 to 3	3 to 5
Oil & Gas Access Roads	1 to 3	10
Geothermal Exploration Wells	.25*	.5 to 2.5
Geothermal Access Roads	5	2
Coal Exploration Licenses	.1 to .2*	1.5 to 6
Locatable Minerals	5	5
Sand & Gravel	15 to 20	.5 to 1.5
Fencing	5 (15 mi)	.6 (3 mi)
Pipelines	5	5
Reservoirs	2	3
Wells	2	.5
Pushing/Root Plowing	)	
Chemical Vegetative Treatments)		
Prescribed Burning	) 2	1,500
Pitting/Furrowing	)	
Seeding/Interseeding	)	
Leases-Section 302, FLPMA	.25*	20
Permits-Section 302, FLPMA	1 to 2	2.5 to 5
R&PPs	.25*	40
Linear ROWs	6 to 10	1.25
Site ROWs	1 to 2	2.5 to 5
Vegetative Products Removal	320	2
Detention Dams	1	9
Diversions	2	3
Water Spreaders	1	60
Wire Checks	2	7.5
Wildfires	1.5	153
Cultural Site Enclosures	2	20
New Vehicle Trails	15	1
Emergency ORV Closures	2	20
Spring Developments	2	1
Umbrella Gamewaters	4	.5
Enclosures	12	40

\* Average number action less than 1 per year over 20-year period.



## MINERALS

The policy of the BLM is to make mineral resources available in accordance with the objectives of the Mining and Minerals Policy Act of 1970, and the National Materials and Minerals Policy Research and Development Act of 1980. These acts require the Federal Government to facilitate the development of mineral resources to meet national, regional, and local needs for domestic and defensive purposes. The BLM is also responsible for assuring that mineral development is carried out in a manner which minimizes environmental damage and provides for the rehabilitation of affected lands. The BLM official policy appears in Appendix B. Most of the public lands in the SRA are available for mineral entry, except where restricted by withdrawals for military, flood control, conservation or other specific purposes.

### Leasables

#### Oil and Gas

The SRA has the responsibility for permitting, inspecting, and enforcing Notices of Intent (NOIs) for geophysical exploration work. The SRA also executes surface management responsibilities associated with permits to drill. The Roswell District is responsible for executing all technical work concerning monitoring "down hole" activities such as protecting aquifers, preventing blowouts, and collecting electrical logs. In the advent of petroleum production, SRA will be responsible for surface management related to production facilities and the Roswell District will be responsible for the management of more technical operations such as production reporting and abandonment. Table 2-1 shows the average estimated acreage of oil and gas activities per year based on the 20-year life of the RMP.

As a general rule, all public land not managed under the BLM Wilderness Management Policy [United States Department of Interior (USDI), BLM 1981], Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM 1983), or where prohibited by other regulations, laws, or stipulations, are

available for oil and gas exploration, leasing, and development. In certain areas, oil and gas leases are issued with only standard stipulations attached. In other areas, leases may have special stipulations attached at the time of issuance to protect sensitive resource values. In highly sensitive areas the "no surface occupancy" stipulation is attached to leases. Site-specific decisions regarding lease issuance and the attachment of appropriate stipulations will be based on the fluid leasing stipulations specified in Appendix B.

Projections of the intensity of future oil and gas exploration is speculative at best. Size estimates associated with operations and facilities are more reliable. Although, no current production exists, it is assumed that production from relatively unexplored basins is possible within the life of the plan.

Geophysical surveys generally precede oil and gas exploration drilling and often necessitate construction of temporary trails or substantial improvements to existing roads. Generally all efforts are made to follow existing roads in the rough country which typifies much of the SRA. Annually it is estimated that there are 5 to 50 miles of linear seismic surveys. New road construction would involve approximately 2 acres of surface per mile of seismic line. For the purposes of this analysis the average survey size will not exceed 100 acres and will involve only shallow grading. Reclamation may be required if activities are not on existing roads and recovery does not occur within one year after completion.

On the average approximately one wildcat oil and gas exploration well has been drilled per year since 1920; approximately half of the wells were located on Federal minerals. Drilling intensity has ranged from only 2 wells in 10 years during the depression in the 1930's to 16 wells in 10 years during the oil embargo of the 1970's. The level of future activity depends primarily on economic stability, foreign supplies, demand, and technologic innovation. For the purposes of this analysis it is assumed that one to three wildcat exploration wells will be drilled each



year which will involve 3 to 15 acres of surface resources. It is assumed that there will be a higher rate of drilling due to new industry interest in a relatively unexplored basin in central Catron County. It is also assumed that approximately 3 miles of roads will be necessary for each exploration well. These roads will cover approximately 10 to 30 acres of surface estate per year.

If oil and gas production occurs during the life of the plan, it is anticipated that it will be in areas of at least moderate potential and most likely in the relatively untested basins in central Catron County.

Under the most optimistic scenario for development, it is assumed that 30 percent of the low to moderate potential area of Catron County will be developed into an oil and/or gas field. Maximum development would result in 1 to 4 gas wells and/or up to 16 oil wells per section. This would disturb 25 to 100 acres of surface resources per section. Assuming that one-third of the development would occur on BLM-administered mineral estate, it is estimated that 12,000 to 50,000 acres of surface resources would be disturbed if a new petroleum province is discovered and maximum development is achieved. Development of this magnitude would assumably result in the production of approximately 10,000,000 barrels of oil and 75,000,000,000 cubic feet of gas annually, once full development is achieved. Production of this level could continue for up to 25 years. This estimate is based on the assumption that Federally-managed producing reservoirs would be similar to that of the southeastern portion of New Mexico and would host approximately one-sixth of the resources.

#### Coal

Although, no Federal coal leases exist within the SRA at the present time, two companies [Dorado Energy and Salt River Project (SRP)] have recently participated in exploring Federal coal resources under two exploration licenses. The SRP of Phoenix, Arizona has initiated development of a coal mine on State and private land that could reasonably extend onto Federal land. Due to the recent

expressions of interest, exploration activity, and the actions taken by SRP, future coal leasing on Federal lands is highly probable within the timeframe of this RMP. The Draft San Augustine Coal Area (SACA) Management Framework Plan Amendment/ Environmental Assessment (MFPA/EA), written in 1984, and Appendix M provide a detailed analysis of coal resources and potential impacts of coal leasing.

It is anticipated that 2 to 4 coal exploration licenses will be issued over the next 20 years (the anticipated life of this plan). Each exploration license will average about 30 drill holes; each drill hole will involve an estimated one-half to one acre. The total surface area affected is estimated at 15 to 30 acres per year.

#### Geothermal

Geothermal resources are managed in a manner similar to oil and gas. The Socorro Peak area has been designated a "Known Geothermal Resource Area" (KGRA). All lands within KGRAs are open to competitive geothermal leasing. Other areas in the SRA are available for non-competitive geothermal leasing. Leases will be subject to all appropriate fluid leasing stipulations identified in Appendix B.

Although there is good evidence of substantial geothermal resources on land managed by the BLM within the SRA, there is a current lack of interest. No shallow high temperature resources (100°+ C) have been discovered to date. Geophysical information indicates the presence of substantial geothermal resources at depths of 1 to 2 miles and greater. It is not expected that any substantial development of shallow resources will occur during the life of the plan. Deep testing of higher temperature sources may occur if energy supplies are restricted or if there are significant technologic advancements in geothermal development. It is assumed that less than five deep test wells would occur in areas of moderate to high geothermal potential during the life of the plan.

It is anticipated this would involve less than 40 acres of surface estate over the life of

the plan. Smaller shallow testing programs may occur, but these exploration efforts would be minimal.

#### Other Leasable Minerals

There is no other leasing activity going on in the SRA other than that previously noted; however, lands are open to other types of leasing subject to site-specific, case-by-case analysis.

#### Locatables

The primary locatable minerals in the SRA are gold, silver, manganese, perlite, uranium, copper, lead, zinc, iron, tin, barite, fluorite, and vanadium. All the land in the SRA is open to mineral entry except where otherwise restricted by law and policy (wilderness areas, Military land withdrawals, etc.). The SRA's primary responsibilities in this program include completing validity examinations for patent or BLM actions, and review and inspection of notices or plans filed under the 43 Code of Federal Regulations (CFR) 3802 or 43 CFR 3809.

#### Saleables

##### Material Sales

Federal lands are one of the major sources of common variety materials for road repair, Rio Grande flood control projects, and other Federal, State, County, and public projects; therefore, there is an ongoing demand for these variety materials which constitutes a major workload in the SRA. Regulations directing this program are in 43 CFR 3600 and will be followed when dealing with this program.

If current demand remains constant, then based on the last ten years' production figures, the SRA will produce 100,000 to 200,000 finished cubic yards of sand, gravel and riprap. Although not all are active at the same time, the SRA has about 15 to 20 pits on which it issues permits. These pits average about 1/2 to 1 1/2 acres of surface disturbance per entry for a total of 8 to 30 acres per year surface disturbance. Usually five new pits

are developed annually to meet shortest haul route requirements and about five pits are abandoned.

#### Indian Land Responsibilities

The BLM works in cooperation [via Memorandum of Understanding (MOU)] with the Bureau of Indian Affairs (BIA) and the Indian tribes on Indian-allotted lands and reservation lands. The BLM has primary responsibility for inspection of mineral leases and enforcement of mineral lease terms and conditions on Indian lands (on Indian lands all minerals are leasable). Surface protection for the oil and gas program is accomplished with BIA and/or tribal concurrence. No mineral activity has occurred on the Indian lands in the SRA to date.

#### RANGELAND

The livestock grazing program in the SRA is authorized by the Taylor Grazing Act of 1934, FLPMA and the Public Rangelands Improvement Act (PRIA) of 1978. These laws direct the BLM in its responsibility to authorize and manage the livestock grazing use under the principles of multiple use and sustained yield, and to prevent the degradation of the rangeland resources by providing for their orderly use, improvement and development.

Other laws or legislative mandates that affect the livestock grazing program include the Endangered Species Act of 1973, Wild Free-Roaming Horse and Burro Act of 1971, the Archeological Resources Protection Act of 1979, and the National Environmental Protection Act (NEPA) of 1969.

The NEPA required that Federal agencies assess the impacts of their programs and actions on the human environment. The BLM was charged by the National Resource Defense Council (NRDC) with not complying with the Act. The court litigation resulted in the BLM being required to write 212 site-specific EIS's for livestock grazing on the public lands within specific time frames. These EIS's provide further program guidance through proposed actions and management objectives identified for the public lands in the SRA.



## Grazing EIS's

In compliance with the court mandate stated above, the SRA completed two grazing EIS's: the East Socorro Grazing Environmental Statement (ES) and the West Socorro Rangeland Management Program EIS. One EIS remains to be completed for the Chupadera Mesa Area. It will be addressed in the SRA RMP/EIS document. Map 2-1 shows the area covered by each EIS.

The EIS's completed in 1979 and 1982 encompassed the boundaries of the former Socorro District office, now the SRA. In 1980, as a result of BLM District boundary changes, administration of the allotments in the Chupadera Mesa area were transferred from the Las Cruces District to the Socorro District. These changes and differences in the SRA separated the grazing program into three different segments. With the completion of the analysis of Chupadera Mesa in this RMP, efforts will be made to consolidate the grazing programs under the SRA rangeland management program area.

### East Socorro Grazing ES

The East Socorro Grazing ES was finalized in 1979 and covered 105 grazing allotments on 767,480 acres of public land. The proposed action was to initiate an intensive livestock grazing program implementing 69 Allotment Management Plans (AMPs) on allotments identified through the Ladron and Stallion MFPs. The AMPs established season of use for livestock, proper livestock numbers, apportioned wildlife and wild horse animal unit months (AUMs), proper grazing treatments and needed rangeland improvements.

It was anticipated that 10 wells, 28 storage tanks, 1 reservoir, 72 miles of pipeline and 200 miles of fence would be needed to meet the goals and objectives of the plan. Since the completion of the ES in 1979 approximately 12 wells and 8 storage tanks, 80 miles of pipeline, and 55 miles of fence have been constructed. These figures do not include rangeland improvements constructed under Section 4 permits.

Of the 69 AMPs identified for implementation, 20 were on allotments with an existing AMP. Ten new AMPs were implemented. Seventeen of the twenty existing AMPs were determined to need revision, seven were revised and ten are presently in category "I" being intensively monitored.

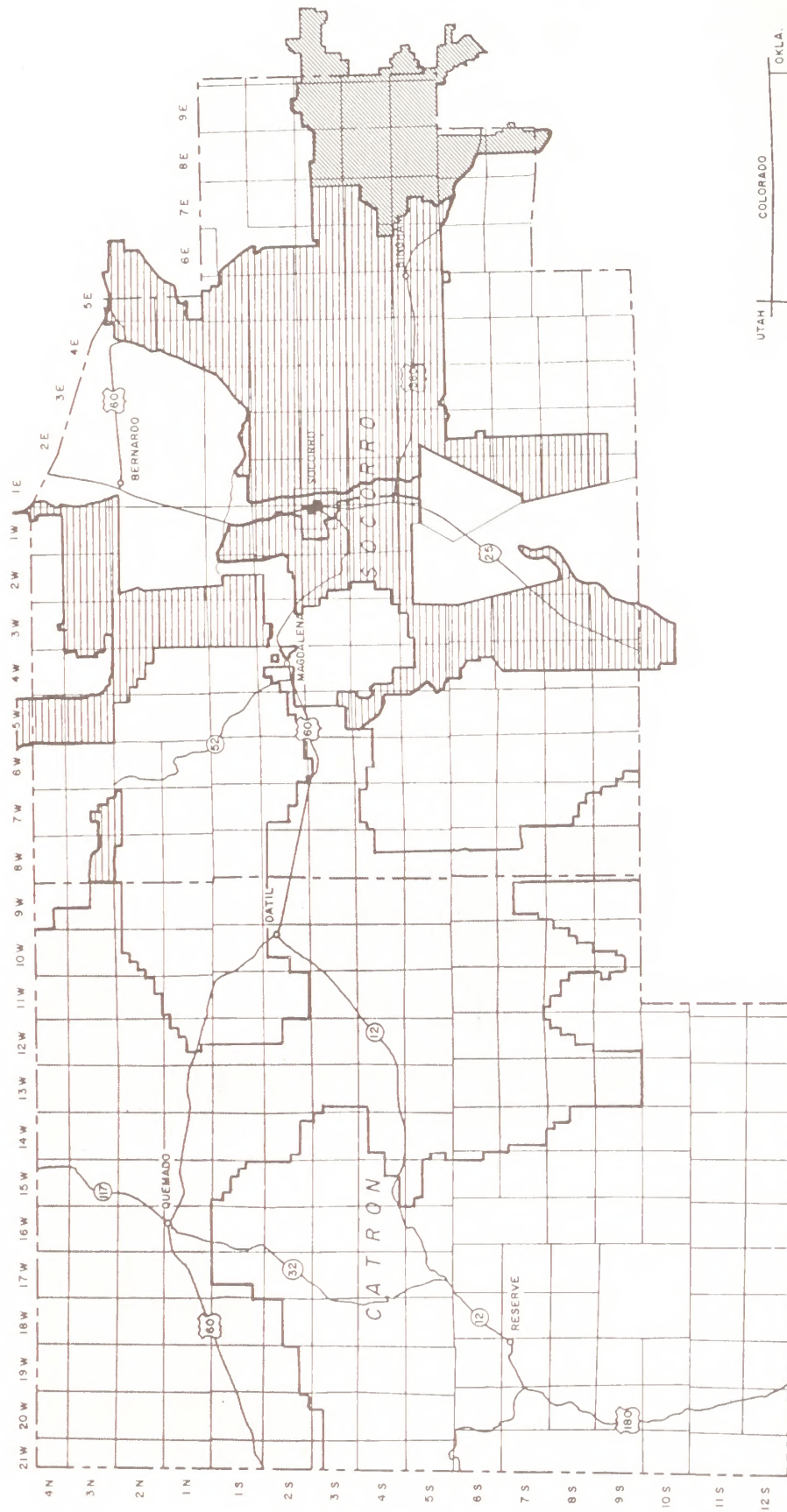
The 39 remaining draft AMPs not implemented still remain valid. Six of these allotments were placed in category "I" due to distribution problems, resource conflicts with watershed and high utilization. The other 33 allotments were placed in category "M" with no significant resource problems or conflicts.

Fiscal year (FY) 86 marked the fifth year of the plan's implementation. Evaluations and decisions or agreements/letters were completed on the 105 allotments. Evaluations completed on the 45 "I" category allotments, identified improved conditions (i.e., utilization levels of 30 to 50 percent, upward trend, improvement in key forage species, etc.) on 23 allotments. These allotments have been placed in category "M" as a result. The annual Rangeland Program Summary Update summarizes the actions which have taken place on the allotments and the progress made to date.

### West Socorro Rangeland Management Program EIS

The West Socorro EIS was finalized in 1982. It covered 156 grazing allotments on 677,090 acres of public land. The proposed action was to improve the rangeland condition of the allotments through the implementation of management actions, rangeland improvements, and vegetative land treatments. Allotments were categorized into six management categories (A, B, C, D, E, and F) based on present range condition, acres of public land within the allotment, and current management; i.e., AMPs or the Experimental Stewardship Plan (ESP), and then prioritized within each category. To be in accordance with the final grazing management policy, the allotment categories were changed to M, I, and C. In priority sequence, intensive consultation was to be conducted on those allotments for the purpose of developing a comprehensive management plan for the allotment.

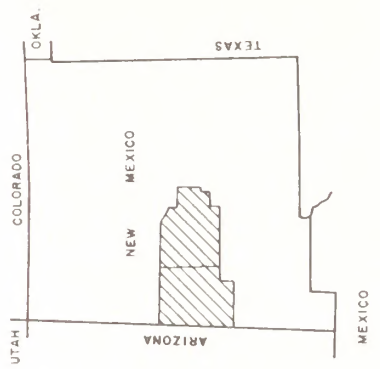




LEGEND

-  EAST SOCORRO
-  WEST SOCORRO
-  CHUPADERA MESA

U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
MAP 2-1  
GRAZING EIS AREAS



It was anticipated that 47 miles of fence, 65 miles of pipeline, 10 wells, 27 pit tanks, 58 troughs, and 353,000 acres of vegetative land treatments used in conjunction with grazing management actions would assist in improving the condition of the rangelands. Approximately 25 miles of fence, 45 miles of pipeline, 3,100 acres of vegetative land treatments have been completed. These figures do not include rangeland improvements constructed under Section 4 permits. To date 26 new AMPs have been implemented and 2 existing AMPs revised.

The decisions affecting the grazing allotments within the two grazing EIS areas have been analyzed in their respective EIS documents. Since there are no substantive issues or conflicts within the allotments, the decisions still are considered valid and are not analyzed further in this RMP/EIS. The exception, however, will be the analysis done on the specific allotments which are affected by the present issues and the analysis of the "Vegetative Use Issue" on the East Socorro Grazing ES, in particular those areas suitable for vegetative land treatments.

#### Chupadera Mesa Area

The Chupadera Mesa Area is at the far eastern end of the SRA. The 12 allotments comprising approximately 121,270 acres of public land have not been covered by a grazing EIS. Decisions affecting the grazing use on these lands will be analyzed in this RMP/EIS.

#### Rangeland Management Policy

On March 5, 1982, the new grazing management policy for the BLM became final. The policy identified goals and objectives consistent with BLM's responsibility to improve the rangelands and manage the grazing use on the public lands in compliance with laws and policies affecting its rangeland management program.

#### Selective Management Approach

The intent of the program is to make the grazing management program more efficient and cost effective. This will be accomplished by

assigning management priorities among allotments or groups of allotments within a planning area, based on similar resource characteristics, management needs, and both resource and economic potential for improvement. Selective management categories can be changed as additional resource data becomes available.

The three basic management categories specified in the Policy are:

- "maintain" (M) category - those allotments with current satisfactory condition;
- "improve" (I) category - those allotments where existing conditions are unsatisfactory; and
- "custodial" (C) category - those allotments where the opportunity for positive economic return on public investment is unlikely.

A copy of the grazing management policy can be found at the SRA office. All allotments within the SRA have been categorized according to the criteria contained in the new grazing management policy. The present allotment categorization, along with a summary of each allotment in the SRA, is displayed in Appendix C, Table C-1.

#### Livestock Grazing Management

The objective of the SRA rangeland management program is to manage the rangelands in an efficient manner by providing effective management to those allotments where it is needed most to maintain, improve, and monitor the range conditions. This can be accomplished through careful planning, giving attention to proper placement of rangeland improvements, distribution of salt, distribution of livestock, kind and class of livestock, suitable grazing systems, plant and animal requirements and vegetative land treatments.

#### Allotment Management Plans

AMPs will continue to be developed for allotments to resolve resource problems or conflicts. Specific management actions will



be developed at the activity plan stage. These plans will be prepared in consultation, cooperation, and coordination with the affected allottees. The priorities for completing AMPs will coincide with the allotment categorization process; e.g., "I" category allotments will be first priority, followed by "M" and "C" category allotments.

#### Grazing Systems

AMPs will include a grazing system which will provide periodic rest from livestock grazing. The type of system to be implemented will be tailored to meet the needs of the allotment and will be developed through consultation with the livestock operator. Consideration will be given to allottee needs, level of management, vegetation objectives, the degree and type of resource conflicts, initial costs to implement the system; ie., fences and waters, and other factors. A variety of grazing systems are available for consideration. Some of these are rest-rotation, deferred, deferred-rotation, rotation grazing, and Holistic Resource Management.

#### Rangeland Improvements

The PRIA outlines the BLM's goal for investing in economically and environmentally sound rangeland improvements in order to improve the public lands for multiple-use purposes. A copy of the policy can be found at the SRA office.

All new rangeland improvements will be required to meet the criterion in Appendix C and will be completed in accordance with priorities established through benefit/cost analysis.

Rangeland improvements and vegetative land treatments (West Socorro EIS area and Nogal HMP area) will continue to be developed on allotments within the two grazing EIS areas, as proposed, to improve or maintain forage production and ecological condition. Implementation of these improvements and the estimated effects from these actions were based on several assumptions:

- Manpower and funding will be available,
- Demand for products (ie., beef) will continue to grow,
- Objectives will be reached within 20 years of plan implementation and,
- Actual implementation of the proposed developments may vary from those described at the planning stage. During the preparation of AMPs the proposed developments may be further refined to reflect changes in allotment management and needs, and changes in legislation, mandates, and policy.

Since the completion of the East Socorro ES in 1979 and the West Socorro EIS in 1982, 12 wells and 8 storage tanks, 125 miles of pipeline, 80 miles of fence, and 3,100 acres of vegetative land treatment (chemical), have been completed. These figures do not include rangeland improvements authorized by Section 4 permits and constructed by permittees.

#### Livestock Use Adjustments

Adjustments are made by changing one or more of the following: the kind and class of livestock grazing on an allotment, the season of use, number of livestock, and/or the pattern of grazing. These actions are considered during the management development process in conjunction with "careful and considered, consultation, cooperation, and coordination with lessees, permittees, and landowners involved . . ." as required by Section 8 of the PRIA of 1978.

Long-term increases in vegetation will be allocated to wildlife, watershed and livestock. The allocation will usually be 50 percent to wildlife and 50 percent to livestock. On "I" category allotments that contain crucial wildlife habitat and/or critical watersheds, the allocation may be greater than 50 percent for wildlife and watershed. Where forage increases occur on allotments with no resource problems/conflicts, the allocation of forage to livestock may be greater than 50 percent. These situations will be handled on a case-by-case basis.



## Monitoring Studies

Monitoring of rangeland resources is necessary to evaluate the effectiveness of implementing season-of-use management, rangeland improvements, the effectiveness of vegetative land treatments, and evaluating initial livestock stocking rates. Rangeland management monitoring studies will be designed to collect data on actual livestock use, utilization of forage species, climatic data, and rangeland ecological condition and trend.

Monitoring studies have been established on all allotments in the SRA. However, the intensity and frequency of monitoring varies according to the management category. Allotments in management category I are monitored at a greater intensity than the allotments in management categories M and C. Any necessary adjustments in stocking levels or other management practices will be based on monitoring studies and consultation with the allottee. Grazing use will continue at existing levels until monitoring studies indicate change is necessary.

## WILD HORSES

One Wild Horse Management Area (WHMA) exists in the SRA. Wild horses have been managed in accordance with provisions of the Wild Horse and Burro Act of 1971 and other legislation applicable to the wild horses. A Wild Horse Management Plan (WHMP) was developed as a result of the above legislation and still remains in effect. The WHMP was completed in 1980 and specified the level of the herd to remain around 32 animals.

Studies will be conducted within the WHMA on a 2- to 3-year cycle depending on the size of the herd, to monitor forage condition, population characteristics of the herd and vigor of the individuals. The types of studies include; 1) habitat studies - such as utilization, trend, actual use (livestock within the WHMA), and precipitation and, 2) animal studies - such as age, class structure, sex ratio, and disease detection. Periodic counts by aircraft will determine population levels and productivity.

Wild horses will be rounded-up and captured to remove excess horses and maintain the stocking level identified in the RMP. Several capture methods have been used by the BLM; these include roping, round-up and trapping by horseback and helicopter, immobilization, dry trapping, and baiting and water trapping (Wild Horse Capture Techniques). Two sites are used for the capture and holding of wild horses: the wild horse corrals and the allottee's corrals.

The captured horses will be examined by a veterinarian to determine age and signs of disease and then transported to the closest distribution center for adoption.

## LANDS

It is BLM policy to make public land and its resources available for use and development to meet national, regional, and local needs, and to be consistent with national objectives. The SRA has an active lands and realty program concentrating its efforts toward the accomplishment of this goal by authorizing a variety of sound land-use proposals and by consummating land ownership adjustments to improve manageability of the public lands and its resources.

### Land Ownership Adjustments

The FLPMA (PL 94-579) provides authority for land ownership adjustments by sale, exchange, withdrawal, etc. The Act further requires that adjustments must be in conformance with existing land-use plans.

A significant amount of public land within the SRA is located in small, isolated tracts, which prove to be difficult to effectively manage, yet only the Divide and Middle Rio Grande (MRG) MFPs have specifically identified these tracts. The Divide and MRG MFPs recognized that land tenure adjustment of these lands through exchanges, sales, transfers, leases, and cooperative agreements could achieve more efficient management of the public land resources. If, however, during specific site examination, resources of national, State, or regional significance are found upon these lands and the potential

adverse effects of an adjustment action cannot be mitigated at a reasonable cost, then the land will be determined unavailable for disposal.

Since completion of the Divide and MRG MFPs, the BLM's concept of specifically identifying disposal tracts has evolved into an identification of disposal areas or blocks, where public lands will be disposed of over the long term. Similarly, areas containing large, manageable acreages of public land to be retained in public ownership and managed under the principles of multiple use and sustained yield, have been referred to as retention blocks. Generally, non-public lands within these retention blocks will normally be considered as suitable for acquisition since management of adjacent public resources would be improved by consolidating public lands into contiguous land ownership patterns.

Specific items to be examined while considering the merits of any disposal or acquisition action include:

1. Consistency and conformance with current planning.
2. Mineral resources and report (see Appendix E).
3. Threatened or Endangered (T&E) Plant/Animal Species and their habitat.
4. Recreation and wilderness values.
5. Prime and unique farmlands.
6. Floodplain/Flood hazard evaluation.
7. Cultural and paleontological resource values.
8. Native American religious values.
9. Visual resources.
10. Areas of Critical Environmental Concern (ACEC).
11. Wetlands.
12. Existing rights and uses.
13. Controversy.
14. Health and safety.
15. Adjacent uses and ownership.
16. Air resources.

#### Public Land Exchanges

The SRA has not had a very active land exchange program, yet has identified 61,520 acres within the Divide Land Use Plan and approximately 150 acres within the Middle Rio

Grande Amendment to the Stallion Land Use Plan as potentially suitable for disposal by exchange. All exchange proposals are examined in conformance with NEPA requirements, including extensive public review. According to the policies outlined in existing land-use plans, any lands which leave Federal ownership as a result of exchange actions must have been previously identified as suitable for such disposal in one of the existing approved planning documents.

On October 3, 1984, the New Mexico BLM State Director and the Commissioner of Public Lands of the State of New Mexico signed an MOU to establish a comprehensive, long-term, Statewide land exchange program between the BLM and the State of New Mexico (USDI, BLM 1984). The objectives are to improve the land management potential of both State and Federal lands, eliminate unnecessary Federal and State conflicts generated by existing ownership patterns, facilitate the management of State and BLM lands by substantially realigning the scattered State and BLM sections and creating solid block or consolidated land ownership, and develop procedures that are most expeditious and cost effective.

#### Sales of Public Lands

The SRA maintains a record of individuals, businesses, and other organizations interested in purchasing public lands. Sales of public lands, identified as suitable for disposal in an approved land-use plan are administered on a case-by-case basis. All sale actions are examined through the NEPA process and are subject to public participation and review. All sales, including landfill sites for local governments, will be at or above fair market value.

#### Middle Rio Grande Occupancy Resolution Program

Since 1976 the SRA has been highly involved with the Middle Rio Grande Occupancy Resolution Program (MRGORP), which was developed to resolve long-standing title disputes within the Rio Grande Valley. These title disputes, which date back to as early as the Treaty of Guadalupe Hidalgo of 1848, have become increasingly confused. Public lands



have inadvertently been bought and sold along with other private lands, creating clouded titles and making title insurance and home improvement loans quite a problem for individual landowners.

The MRG MFP amendment to the Stallion MFP mandated the disposal of the majority of public lands within the Valley primarily via the Color-of-Title Act of 1928 as amended. Those public lands which were determined not to be necessary for BLM resource programs have, or are to be disposed of by sales pursuant to Section 203 of the FLPMA of 1976.

The MRGORP area consists primarily of a six-township area which stretches from the Sevilleta Land Grant in the north to the Bosque del Apache Wildlife Refuge in the south. To date the SRA has completed its work in the northern four townships and expects to complete all disposal actions in the remaining two townships by the end of fiscal year 1989.

#### Land Withdrawals

BLM policy is to keep the public lands open for public use and enjoyment. However, there are conditions which may warrant the removal, or withdrawal, of certain public lands from multiple use; e.g., public safety or protection of special uses and resources.

Withdrawals designate public lands for a particular project, purpose, or use. They may transfer jurisdiction to another Federal agency. Normally, they will close the land to entry under all or some of the public land laws including the mining and mineral leasing laws. All withdrawals in the SRA have been, or will be reviewed, according to the requirements of laws and existing guidance. Withdrawals will be continued, modified, or terminated consistent with the need as rejustified by the withdrawing agency.

Classifications were made under the authority of the Classification and Multiple Use Act of 1964 (78 Stat. 936). These classifications delineated lands suitable for disposal consistent with the requirements of the Act or for retention for multiple-use management. The retention classifications segregated the

land against entry under certain public land laws. Small areas with high unique resource values were sometimes further segregated against entry under the mining laws and/or the mineral leasing laws. All classifications and classification terminations have been reviewed as part of this planning effort. This document deals with the questions of retention and disposal and the segregations needed to accomplish these objectives. It also recommends the placement of further segregations against the mining laws and/or mineral leasing laws where they are needed to protect unique and valuable resources.

#### Recreation and Public Purposes

Under the Recreation and Public Purposes (R&PP) Act, the BLM has the authority to lease or patent public land to governmental and non-profit entities for public parks, and building sites, at less than fair market value. Applications for use of public lands under the R&PP Act are processed as an SRA priority. Such applications are processed under the requirements of NEPA and are subject to public review.

#### Rights-of-Way, Leases, and Permits

The SRA grants rights-of-way, leases, and permits to qualified individuals, businesses, and governmental entities for the use of the public lands. New rights-of-way are also issued simultaneously with existing rights-of-way to promote joint use whenever possible. All right-of-way actions are coordinated, to the fullest extent possible, with Federal, State, and local government agencies, adjacent landowners, and interested individuals and groups. All right-of-way applications are analyzed site specifically on a case-by-case basis, and natural and cultural values are protected or avoided.

It is assumed that management will continue to authorize these routine, non-issue oriented realty actions throughout the 20-year life of this RMP. These actions are likely to occur on a continuing basis no matter which alternative is ultimately selected, and include the granting of routine rights-of-way, leases, permits, and R&PPs. Table 2-1 depicts



the estimated average acreage of surface disturbing activities per year associated with their authorization based upon the 20-year life of the RMP.

These estimates are based upon past activities and assumptions of the projected future demands to be placed upon the realty program. The SRA generally processes from 6 to 10 new linear rights-of-way per year with an average width of 20 feet and a length of 1/2 mile. One to two site rights-of-way and one to two short-term permits issued annually account for an additional 10 acres per year. Seldom issued leases and R&PPs cover an average of an additional 15 acres per year. All of the above mentioned future activities will be subject to site-specific environmental analysis whereby mitigative measures will be incorporated within the authorizations to minimize the adverse effects of any surface disturbing activity. Project construction areas will be rehabilitated by various reseeding and soil manipulating activities.

## ACCESS

The SRA has a relatively inactive easement acquisition program, as normally only one or two easements are acquired each year. As required by BLM policy, these easements generally provide legal access to BLM-initiated rangeland improvement projects.

On a case-by-case basis easements are acquired to establish legal access where only physical access exists or resource conflicts are occurring.

Physical access to the public land has not been a major problem, yet various activity plans will be developed which will identify specific locations where legal access is needed. Appendix F discusses the priorities for developing access activity plans within the SRA. As the activity plans are approved, the required easements will be prioritized by the SRA.

## FORESTRY

### Timber

The Material Disposal Act of 1947, as amended, and FLPMA direct the forestry program in the

SRA to manage the ponderosa pine stands on a multiple-use and sustained-yield basis. The management goal will be to provide long-term maintenance of the pine stands and to enhance the other natural resources. The Material Disposal Act of 1947 established the authority under which the BLM disposes of timber and other forest products.

The long-term goal of the forestry program in the SRA is to conduct silvicultural practices that will encourage natural regeneration, reduce encroachment of the woodland species, and increase individual tree vigor. Since the existing ponderosa pine forests are managed for the enhancement and protection of the stands instead of for maximum production of wood products, no specific allowable cut goals will be established.

The last timber harvesting operation was carried out in 1976 on Pelona Mountain. Several mistletoe eradication projects were attempted and were partially successful. No follow-up projects were funded and no timber sales have been offered since that time.

Small scattered tracts of ponderosa pine exist adjacent to the U.S. Forest Service (FS) boundaries and outside of the Wilderness Study Areas (WSAs). These tracts will require silvicultural treatment in the future if they are to remain pine sites and not revert to woodlands. All forestry activities implemented in these forests will conform to standard silvicultural practices. Most of the previous forestry program has emphasized woodland products disposal to meet public demand rather than timber management or development.

### Woodlands

Out of 350,000 acres of pinon-juniper woodlands in the SRA, only about 40 percent is capable of being managed on a sustained-yield basis. The slower growth rate coupled with the poorer sites, makes any kind of sustained yield difficult. Until the results of the Statewide Woodland Inventory are available, the program will only satisfy the local public demand for fuelwood, fence posts, Christmas trees, and wildlings utilizing standard silvicultural practices and a sustained-yield

approach. Once the information is available from the woodland inventory, specific activity plans can be prepared and sustained-yield calculation quotes obtained.

Using the authority granted BLM in the Material Disposal Act of 1947 and the 1982 Public Domain Woodlands Management Policy Statement the long-term goals of the Woodland Management Program in the SRA are to establish and maintain healthy stands, produce forest products on a sustained-yield basis, reduce trespass cutting throughout the SRA and manage stands with consideration for other forest and woodland product yields.

Public land areas in the SRA containing vegetative products, such as firewood, fence posts, Christmas trees, and wildlings (including cactus spp.) will continue to be considered and designated for harvest. The current demand for these resources is increasing annually. Currently within the SRA approximately 6,500 acres have been designated to meet this demand; however, it is estimated that no more than an average of 10 percent or 650 acres per year would be involved. Actions would include off-road vehicle (ORV) travel, plant digging, slash disposal and material skidding. For acreage estimates by vegetative product see Table 2-1.

## SOILS/WATER RESOURCES

### Soils

Participation with the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) in the National Cooperative Soil Survey Program will continue. Updating of the soil surveys and soil interpretative data will be maintained as current as possible. Soils data will be used in planning, support, and implementation of resource activities. BLM manual 7100 and NMSO Instruction Memorandum 78-47 will provide administrative guidance to the soil resource program.

Emphasis is placed on prevention of deterioration or degradation as well as conservation of the soil resource. Some protection is provided by the Conservation

Reserve Program. All lands in soil capability classes II through VIII are not suitable for desert land entry petition application or agricultural leases. This program seeks to remove highly erodible lands from marginal agricultural operations.

### Water Resources

Policy and guidance for the management of water resources associated with lands administered by the BLM is summarized in BLM manual sections 1621, 7000 through 7300. A brief description of the different authorities for the program is also presented. General program emphasis is on water rights and watershed management, specifically related to water quality and sediment yields.

### Water Rights

Currently a water use and water rights inventory is being completed in the SRA to identify the status of the BLM's water rights filings.

All water rights are acquired in accordance with State substantive and procedural law except where Congress or the Executive Branch has created a Federal reservation of a water right.

Federal reserved water rights are defined in Interior Solicitor's opinion of June 25, 1981, as modified by Solicitor's opinion on September 11, 1981. BLM's Federal reserved water right claims are primarily associated with the withdrawal established by the Executive Order of April 17, 1926, dealing with public water reserves.

### Water Quality

Water quality regulation in the United States receives its basic authority from two laws. The Federal Water Pollution Control Act of 1972 and the Clean Water Act of 1977 as amended are the basic authority for instream water quality standards and maximum permissible pollutant discharges. The Safe Drinking Water Act of 1974 is the basic authority for domestic water quality standards.



The BLM's water resource program includes participating with the State and Environmental Protection Agency (EPA) in water quality management, to ensure that management practices comply with State water quality standards.

The Colorado River Salinity Control Act passed in 1974 directs the Secretary of the Interior to undertake research and development of salinity control projects and to develop methods to improve water quality. An amendment to the Act passed in 1984 specifically requires the Director of BLM to develop a comprehensive program for minimizing salt contributions to the Colorado River from BLM-administered lands. Specific watershed plans have been prepared to reduce sediment yields and improve water quality through salt reduction.

#### Dam Safety Program

The first phase of the program is an inventory of dams, assessing the condition and maintenance needs of each structure. The second phase includes the development of a maintenance and rehabilitation plan for all structures and specifically those dams with a high risk of failure.

#### Watershed Activity Plans

In order to better organize and establish priorities in the watershed program, a review of watershed plans and updating of watershed summaries is needed. Some of the watersheds will be in Special Management Areas (SMA) and receive special management. Projects of lower priority will be on standby until funds are available.

Control of soil erosion, sediment movement, and salt contamination of surface water remains a high priority management goal. Areas with critical to severe erosion (1.0 to greater than 3.0 acre ft/mi<sup>2</sup>/yr) sediment yields, which produce runoff having more than 1,000 milligrams per liter (mg/l) dissolved salts, will be of major focus. Salinity control will be a priority on saline soils within the Colorado River drainage.

There are three large general areas of critical watershed in the SRA; the Stallion, Puertecito, and Fence Lake. These areas are being proposed as SMAs. Several other areas of localized critical watersheds exist and are further identified in the Divide Unit Resource Analysis (URA), East Socorro Grazing ES, and the West Socorro Rangeland Management Program EIS.

Continuing efforts to control erosion will include the following: minimizing surface disturbance from construction projects, closure and rehabilitation of unneeded roads, and control of ORV use in critical areas. This direction was provided in the East Socorro Grazing ES and the West Socorro Rangeland Management Program EIS.

The hydrology program will continue to emphasize its legislative mandates of protection, as they relate to surface and groundwater quality, as well as provide support to other resource activities in the SRA.

Project level planning will consider the sensitivity of the watershed (ie., soil, water, and vegetation) resource in the affected area on a site-specific basis. All rangeland improvements and land treatments will be designed to minimize the adverse impacts to the watershed resource. Project construction areas will be reseeded with a mixture of grasses, forbs, and shrubs as necessary. The average size of watershed management practices is estimated to be approximately 740 acres per year. These practices consist of contour furrowing and pitting, mechanical treatments and constructing detention dams, diversions, water spreaders, wire checks and exclosures. For specific acre estimates of these practices refer to Table 2-1.

#### **AIR QUALITY**

Reduction of air quality impacts from activities on public lands is accomplished by mitigation measures developed on a case-by-case basis through the NEPA or other statutory or regulatory processes. Each impact is evaluated to see if it is allowable



and acceptable. Activities such as road construction and mining have fugitive dust abatement programs as part of their permits or contracts.

The BLM is required to comply with the New Mexico State Implementation Plan on air quality as well as meet responsibilities under the Clean Air Act, as amended, and FLPMA.

The BLM 7300 Manual will provide administrative guidance on air resources upon approval.

## FIRE

The District is operating under the National Interagency Incident Management System (NIIMS). The number and size of fires varies from year to year, depending on the occurrence of lightning storms and the amount of fire fuels build-up. Between 1968 and 1986, there were 31 fires on lands administered by the SRA. During those years, annual ignitions ranged from zero in six of the 20 years to ten ignitions in 1971. Just over 14,700 acres burned during that period; however, 81 percent of that occurred during one year, 1971. During this period, 21 of the fires were caused by lightning with sizes ranging from .1 of an acre to 10,106 acres. There were three fires caused by arson and six caused by debris burning. Wildfires involve approximately 230 acres of surface per year (see Table 2-1). Fuels consumed were primarily grass, pinyon/juniper, sagebrush and a little creosote. For more details on fuel types refer to the maps and fuel models in the District Fire Management Activity Plan.

The current SRA policy is to initially attack all wildfires on, or threatening, public lands. Currently, a Joint Powers Agreement (JPA) exists between the BLM, NMSO, the U.S. FS Region III, and the New Mexico State Forestry Division. Under the JPA the three agencies operate under an exchange of initial attack areas with fire protection responsibilities for private, State, and Federal lands. The BLM SRA maintains an initial attack fire crew on a year-round basis.

## WILDLIFE

Legislation such as FLPMA, the Endangered Species Act of 1973, and the PRIA, as amended, have directed the BLM to improve management of wildlife habitat to meet wildlife needs in the face of increasing demands for basic energy supplies, building materials, and food products. It is the responsibility of the SRA to identify opportunities to maintain, improve, and expand wildlife habitat on the public lands for both consumptive and non-consumptive use and identify portions of the wildlife resource deserving special attention. Furthermore, it is USDI regulation (as specified in 43 CFR 24.4) that Interior agency fish and wildlife management strategies assist State agencies in accomplishing fish and wildlife resource plans.

All actions in the SRA are reviewed and given site-specific analysis during the environmental assessment (EA) process to determine whether the action will affect wetland or riparian areas. Also considered are impacts to resident species' habitat or habitat improvement projects and compatibility with the New Mexico Department of Game and Fish (NMDG&F) Comprehensive Wildlife Plan (NMDG&F 1986). All rangeland and watershed improvements will continue to be designed to achieve both range and wildlife objectives. This includes location and design of waters and vegetation manipulation projects. Fences are designed to cause the least resistance to wildlife movement.

### Animal Damage Control

Animal damage control activities on public lands in the SRA are guided by USDI policy and the annual Animal Damage Control Plan for the Las Cruces District, prepared jointly by the USDA and the BLM. The USDA has the responsibility for the program and supervises all control activities. The BLM has approval responsibility for all specific control actions on public lands.

### Habitat Management

Habitat Management Plans (HMPs) are developed in an effort to improve wildlife habitat.

Implementation of existing HMPs (Red Hill, Nogal, Pelona/Horse Mountain, Rio Grande, and Ladrones Mountain) will continue as funding allows. Existing HMPs are on file and available for public review at the SRA office. The Ladrones Mountain HMP may undergo revision to conform with the NMDG&F plans in regard to bighorn sheep management.

Detailed estimates of big game forage allocations are presented in Appendix C, Table C-1. Monitoring of the big game habitat by key species utilization will continue to be conducted as part of the rangeland program monitoring plan. The information obtained from the vegetative transects will be incorporated into final grazing decisions.

#### Threatened or Endangered Species Management

The Endangered Species Act requires that the BLM consult with the U.S. Fish and Wildlife Service (FWS) on all actions which may affect a T&E species.

BLM policy for the endangered species program is to give priority to the protection of habitat for known populations of Federal and/or State listed species.

Present management for Federal and/or State T&E species consists of evaluating all proposed actions for their potential impact on known populations of, or potential habitat for, listed or candidate species. These evaluations are also conducted on split estate lands if the surface management agency does not have adequate data.

Protection and management of bald eagle roost areas will continue. Inventory for Federal and/or State candidate species will continue, and monitoring programs will be implemented on known populations of listed and candidate species. Where monitoring identifies threats to these populations, appropriate actions will be taken to protect the species and its habitat.

Wildlife management actions (ie., spring developments, exclosures, and game waters) involve approximately 185 acres of surface disturbance per year. The vegetative land

treatment actions for wildlife habitat improvement are included in the total estimate for vegetative land treatments. For specific acre estimates of these practices refer to Table 2-1.

Prior to authorizing activities in crucial wildlife habitats (winter ranges, raptor nest sites, fawning habitat, etc.), considerations will be made to avoid or minimize disturbance to wildlife. The area and time stipulations are shown in Table 2-2.

Table 2-2  
Wildlife Habitat Occupancy Restrictions  
(for Oil, Gas, and Geothermal Exploration  
and Development and all Major  
Construction Activities)

Species	No Occupancy	
	Time Periods	Area
<u>Game Species</u>		
<u>Antelope</u>		
Crucial Fawning Ranges 1/	5/1 - 8/1	Entire Habitat Area
<u>Elk</u>		
Crucial Winter Range 1/	11/1 - 4/1	Entire Habitat Area
<u>Sensitive Species</u>		
Ferruginous Hawk Nests	2/1 - 7/15	Within 1/2 mile radius from nest
<u>Endangered Species</u>		
Bald Eagle Wintering Areas	11/1 - 4/1	Wintering Areas
<u>Species of Concern</u>		
Golden Eagle Nests	2/1 - 7/15	Within 1/2 mile radius from nest
Prairie Falcon Nests	3/1 - 8/1	Within 1/2 mile radius from nest
<u>Special Habitats</u>		
Reservoirs, ponds, lakes, wetlands, riparian areas	Yearlong	Within 500 feet

1/ Those areas where big game animals have demonstrated a definite pattern of use each year or an area where animals tend to concentrate in significant numbers.



Prescribed burning will be designed to improve wildlife habitat.

Range management practices and rangeland improvements will be designed or modified to maintain or improve wildlife habitats. Livestock grazing management will incorporate the needs of key plant species important to wildlife.

All new fences will be built to allow for wildlife passage in accordance with BLM fence standards. Any existing fences obstructing wildlife movements will be brought into conformance with the adopted standards.

Wildlife escape devices will be installed on all new and existing water tanks or troughs constructed for livestock within the SRA.

The construction of new roads into crucial wildlife habitats will be avoided to the extent possible. Permanent or seasonal road closures may be instituted where problems exist or are expected.

Raptor habitat will be improved by requiring all new power lines to be constructed to "electrocution proof" specification and any problem lines to be modified to be "electrocution proof."

Riparian and wetland habitat have a high priority for protection and improvement in accordance with State and national policy.

Suppression of wildfire in riparian habitats will have a high priority. Riparian areas which have burned will be rehabilitated through protection and, if necessary, seeded or planted.

Grazing management practices will be designed and established to meet riparian and water quality needs in the development of new AMPs and in the revision of existing AMPs. In those instances where management systems alone cannot meet objectives, provisions for fencing or other means of exclusion will be utilized. No livestock-related activities such as salting, feeding, construction of holding facilities, and stock driveways will be allowed to occur within the riparian zones.

Construction activities which remove or destroy riparian vegetation will be avoided to the extent possible.

All new spring developments will be designed to protect wetted areas, while selected existing spring developments will be modified for the same reason. Where possible, and if the need exists for wildlife, reservoirs will be fenced and water for livestock will be provided away from the reservoirs. Wildlife habitat needs will be considered when reservoir site determinations are made.

## CULTURAL RESOURCES

The objective of the SRA cultural resource program is to manage cultural resources on the public lands in a manner that protects and provides for their proper use. Cultural resources include archeological, historic, and socio-cultural properties. Paleontology and natural history are also managed under the cultural resource program; although paleontology is addressed separately in this document. The degree of management is commensurate with the scientific or socio-cultural values of the resource, the degree of threat, and the resource's vulnerability. Under this concept, the SRA attempts to protect a representative sample of the full array of cultural resources, both prehistoric and historic, found on BLM-administered land.

Federal laws such as The National Historic Preservation Act of 1966 (NHPA) as amended, the Archeological and Historic Preservation Act of 1974, the Archeological Resources Protection Act of 1979 (ARPA), the American Indian Religious Freedom Act of 1978 (AIRFA), and the FLPMA provide for the protection and management of cultural resources.

These laws are implemented through Federal regulations, which provide guidance for the operational procedures of the cultural resource program in meeting the requirements of the law. One of the primary regulations directing procedures for compliance is 36 CFR 800, "Protection of Historic and Cultural Properties," which implements Section 106 of NHPA. These regulations, as amended



(Federal Register, Vol. 51, No. 169. Tuesday, September 2, 1986), determine how the NHPA shall be implemented by Federal agencies, State Historic Preservation Officers (SHPOs), and the Advisory Council on Historic Preservation. In New Mexico, a Programmatic Memorandum of Agreement (PMOA; NMSO-168, incorporated by reference) between the three parties further defines these roles and streamlines the consultation process. Other relevant regulations are 43 CFR 7, which implements ARPA; and 36 CFR 60, which makes operational the National Register of Historic Places. In addition to Federal regulations, special agreements such as the PMOA cited above, instruction manuals, and memoranda are issued at various departmental levels to provide both general and specific guidance for the management of cultural resources. Current instruction memoranda issued at the national, State, and District levels are retained in the SRA files, and are incorporated by reference. Two local agreements affect management of cultural resources; an agreement with the New Mexico SHPO concerning the waiver of intensive archeological survey under specific conditions for the MRGORP, in conformance with PMOA NMSO-168; and a Cooperative Agreement with the New Mexico Bureau of Mines and Mineral Resources (NMBMMR), which is discussed in the Paleontology section of this document. Both of these agreements are in conformance with Federal plans and policies.

Archeological and historic resources are evaluated initially under the criteria of eligibility of the National Register of Historic Places (36 CFR 60.4). Sites listed or eligible for the National Register are managed under BLM procedures which have been developed in conformance with relevant laws and regulations.

Socio-cultural resources are managed in accordance with AIRFA, and with relevant sections of 43 CFR 7, which take into account issues of concern to Indian tribes in the implementation of ARPA. The consultation process with Indian tribes concerning sites and locations of traditional religious significance is open and on-going, and has occurred in the preparation of this document.

## Inventory

The BLM undertakes and maintains a cultural resource inventory for all BLM-administered lands. These inventories are categorized into three classes: Class I - Existing Inventory and literature search; Class II - Sampling field inventory (all sample units are inventoried to Class III standards); Class III - Intensive field inventory. Except under certain specific conditions, set forth under the BLM Cultural Resource Manual and NMSO-168, Class III inventory is required before any surface disturbance may occur.

The SRA maintains a cumulative site inventory file documenting the locations of all known sites, all areas surveyed, as well as areas known to be devoid of cultural resources. In the SRA the latter situation exists only in isolated tracts previously subject to Class III survey with negative results, or subject to total surface alteration in the past through natural or human forces; all unsurveyed portions of the SRA can be expected to contain varying densities of cultural resources.

Cultural resources in the SRA are organized into five classes with subclasses which roughly parallel traditional Southwestern cultural/temporal distinctions: (1) Paleo-Indian, (2) Archaic (Cochise; Oshara), (3) Pueblo (Anasazi; Mogollon), (4) Historic, and (5) Unknown. These are management classifications and are synthetic in the sense that they generalize broad, temporally-based classes of sites, allowing the development of long-term management strategies appropriate to a particular class. A Class I inventory has been prepared for SRA, and provides an outline of culture history and a broad discussion of cultural/temporal classes (Berman 1979; incorporated by reference).

Approximately 2,000 cultural resource sites are presently recorded within SRA. Estimates on the total number of sites range from 20,000 to 30,000 and this is probably an accurate range. Among the presently recorded and projected sites, a large percentage are probably eligible for inclusion in the

National Register of Historic Places, primarily under Criterion "D" (36 CFR 60.4.d; scientific potential). Seven sites within SRA are currently listed on, or have been formally nominated to, the National and/or New Mexico State registers of historic properties. These are:

National Register:

The Ake Site  
Bat Cave  
Cox Ranch Ruin ("Mogollon Pueolo")  
Fort Craig  
Parida (nominated)  
Piro Thematic Sites (nominated)

State Register: (the above, plus)

Mockingbird Gap

Evaluation

The management goal category system establishes long-term strategies for each of the five classes of cultural resources. These goal categories provide the basis for committing individual cultural resource sites or properties to a specific-use category.

BLM evaluates cultural resources according to the use-category system. This category system is based on the consideration of actual or potential use of individual sites or properties and are: (1) Current Scientific Use, (2) Potential Scientific Use, (3) Conservation for Future Use, (4) Management Use, (5) Socio-Cultural Use, (6) Public Use, and (7) Discharged Use.

Cultural Resource Management Plans (CRMP)

The SRA is currently implementing four CRMPs: Bat Cave and Fort Craig National Historic Register Properties, the Arroyo del Tajo pictograph site, and Teypama (a Piro pueblo ruin). Future CRMPs will be developed for some of the SMAs identified in this RMP/EIS.

Protection

The SRA protects cultural resources on a limited basis through the application of both

administrative (such as ORV closure) and physical measures (such as fencing) as necessitated by the cultural resource's scientific and socio-cultural value, vulnerability, and degree of threat. Interim protection focuses primarily on the Patrol and Surveillance Plan, until specific cultural resource management objectives are developed. SRA has implemented a formal Patrol and Surveillance Plan designed to protect major, well-known sites, investigate conditions of vandalism and natural forces in remote areas, and concomitantly increase site inventories through site recordation during patrols. An active program of signing cultural resource properties under threat of active or potential vandalism will continue. These current management practices have decreased the level of vandal-caused damage to specific sites, such as Fort Craig, and have had positive effects throughout the SRA. Vandalism appears to have stabilized at a level reduced from previous years.

Grazing exclosures and ORV limitations are administrative actions which would continue under all alternatives of this RMP. Grazing exclosures for the protection of cultural resources are often small (an average of 40 acres) and may not, as a rule, affect AUMs. Likewise, limitations on ORV use are generally localized for protection of specific sites, and may average 40 acres per year (Table 2-1).

Resource Stabilization

In recent years, three sites have received some measure of repair for improved preservation. Portions of the Fort Craig adobe casements have been repaired and stabilized; vandal damage to the Teypama Piro pueblo ruin has been partially mitigated through data recovery and limited stabilization; and damage to the cultural talus of Bat Cave, resulting from uncontrolled visitor foot-traffic, has been lessened through the definition of visitor trails. All of these measures are interim and minor, in comparison to the needs of the specific sites and the endangered sites of the SRA as a whole. Although vandalism appears to have stabilized in recent years, extensive past vandalism is the primary cause for the rapid



deterioration of the sites which are presently most endangered.

Actions to stabilize degradation of ruins are common to all alternatives, and may involve physical measures to control erosion and arroyo cutting and acquisition of sterile fill from BLM sources for recontouring of damaged sites. Erosion control may average 10 acres of protective measures per year, and recontouring may require an average of 2,000 cubic yards of fill annually.

#### Special Management Areas

One ACEC is presently managed primarily for its cultural values. This is Tinajas ACEC, which surrounds the Arroyo del Tajo pictograph site. The management of this site under its current activity plan is consistent with the objectives of this RMP. CRMPs are in effect for three additional sites: Bat Cave, Fort Craig, and Teypama, and these are also consistent with the objectives of the RMP.

These four sites, encompassing 1,482 acres, will be subject to continued special management under all alternatives of this RMP.

#### Program Direction

The legislative and regulatory framework cited at the beginning of this section is operationalized in the field by the SRA cultural resource base program outlined above. These elements of the existing base program are common to all alternatives even though contrasting emphasis would be placed on certain elements under different management approaches to the issues of this RMP (cf. SMAs under Alternatives C and D, Chapter 4). The cultural resource base program has evolved over a relatively short period to appropriately manage archeological and historic properties on public lands. In addition to the existing program, two elements of continuing management guidance need to be focused through planning and operationalized through this RMP.

Section 110 of the NHPA states that it is the responsibility of each Federal agency to establish a program to locate, inventory, and

nominate all properties under the agency's ownership or control that appear to qualify for inclusion in the National Register. The SRA cultural resource program will meet its responsibilities to Section 110 by establishing a goal for completion of a 10-percent inventory over the approximate 20-year life of the plan.

Although the 10-percent sample will be stratified across the entire SRA, an initial focus will be in regions of potentially conflicting uses, such as disposal areas and mineral extraction areas. This sample will provide comprehensive data which may be used to determine significance of sites and enable the BLM to make well-balanced decisions. An overall goal of the sample inventory will be to gather sufficient data to build a model of cultural processes which are reflected in site density and distribution for the SRA.

In addition, National Register nominations will be prepared on a regular basis. A goal of one nomination per year has been set. These actions will allow the cultural resources staff to make better informed decisions about the direct and indirect impacts on cultural resources. It will also significantly strengthen the current management approach for protection of cultural resource sites.

#### Natural History

Natural history resources are ecologic or geologic features significant to the Nation's natural heritage.

Natural history resources are generally managed as National Natural Landmarks under authority of the Historic Sites Act of 1935 and in accordance with 36 CFR 62. BLM management of natural history resources is also subject to 43 CFR 8200, which provides for identification and establishment of Research Natural Areas (RNA), and 43 CFR 8352, which provides for designation of Outstanding Natural Areas (ONA).

SRA presently manages four localities identified under the Stallion MFP as special designation areas. These are: Tinajas ACEC;



San Lorenzo Canyon ONA; Amado Springs RNA; Soaptree Yucca ONA.

Except for Tinajas ACEC, MFP decisions related to these specially-designated areas have not been fully implemented and have required revision for consistency with this plan. Other SMAs considered in previous MFPs, such as designation of Nogal Canyon South and Torreon Springs, were premised upon the acquisition of private lands and are not feasible to carry forward for implementation.

## PALEONTOLOGY

Paleontological resources consist of the fossil record of past plant and animal life, and are protected under FLPMA and managed through the issuance of scientific use permits. Petrified wood is managed under public free use which is authorized under 43 CFR 3622. Although significant paleontological resources occur in SRA, the resource has required only a low level of management attention. Use by both professional researchers and hobby collectors has been limited in comparison to other regions where either higher interest in fossil collection occurs, or where conflicting land uses have raised paleontology as a resource issue. The NMSO presently issues only one to two permits for scientific use of paleontological resources each year in the SRA.

The SRA has entered into a cooperative agreement (incorporated by reference) with the NMBMMR in an effort to improve the management of paleontological resources. This agreement provides support to SRA with special expertise of the NMBMMR, and defines roles and joint activities in the management of the resource. The agreement is consistent with the objectives of the RMP, and continues in effect.

The NMSO has entered into an MOU with the State of New Mexico Energy and Minerals Department (NM 21-3032) for the mitigation of paleontological resources on BLM-managed coal mining leases in New Mexico. This MOU governs applicable activities in the SRA.

Presently, there are no SMAs managed primarily for paleontological resources. Under the

Stallion MFP, the Carthage Fossil Area was considered for such designation and determined ineligible. As with archeological resources, paleontological resources are subject to an active and continuous discovery process, and future special management designations are warranted, when consistent with the objectives of the RMP.

## RECREATION/OFF-ROAD VEHICLES

Recreation programs are managed according to multiple-use principles unless otherwise specified by law or BLM policy. The mission of the program is to ensure the continued availability of quality outdoor recreation opportunities and experiences that are not readily available from other sources. Recreation use is managed in order to protect the health and safety of visitors; to protect natural, cultural, and other resource values; to stimulate public enjoyment of public lands; and to resolve user conflicts.

A range of outdoor recreation opportunities such as backpacking, camping, sight-seeing, hunting, climbing, picnicking, and motorcycling, will continue to be provided for all segments of the public, commensurate with demand. Trails and other means of public access will continue to be maintained and developed where necessary to enhance recreation opportunities and allow public use. Primary management emphasis of recreation resources needed to meet public demand will be established in activity plans for recreation-related SMAs. These SMAs include Ladron Mountain, Pelona Mountain, Cerro Pomo, Soaptree, Horse Mountain, Tinajas, Fort Craig, Continental Divide National Scenic Trail, Datil Well Campground, The Box, and San Lorenzo Canyon (see Appendix L). Planned actions within these SMAs will be implemented to ensure recreation management objectives are attained.

### Developed Recreation

The Datil Well Campground is the only developed recreation site in the SRA. Currently, there is no Recreation Area Management Plan (RAMP) for the campground. A plan should be developed to properly guide the resource management of the campground.

## Dispersed Recreation

Current management direction for dispersed recreation opportunities is provided for in 43 CFR 8300 and subsequent BLM manuals. The 12 WSAs in the SRA are administered under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM 1983) concerning recreation opportunities.

## Motorized Recreation

It is BLM policy that all public lands be designated as "open", "limited", or "closed" to motorized vehicle use. Public lands in the SRA are "open" to motorized vehicles unless an interim, standard, or emergency closure designation is in effect or needed to restrict or close areas to protect resources, reduce user conflicts, and/or enhance public safety. An estimated two closures per year totalling 40 acres are anticipated to protect cultural resources (refer to Table 2-1).

As a result of various activities, 15 miles of recreation vehicle trails will be created each year. The trails will vary from obscure two-track trails that run along fences and pipelines, which are used infrequently, to established trails that are used by hunters and other recreationists on a regular or seasonal basis (see Table 2-1).

## Recreation Opportunity Spectrum (ROS)

The BLM utilizes the ROS as a framework for defining outdoor recreation opportunity environments. It is the management tool for inventory, planning, and administration of outdoor recreation resources on public lands. A general description of the ROS classes is located in Appendix I. Refer to BLM Manual 8320 for details.

### ROS Management Objectives

Of the six ROS classes, the SRA has established three ROS class objectives. These objectives have only been established for the SACA. Table 2-3 displays the public land acreages per ROS class management objectives. Additional ROS inventory is needed for the remainder of the SRA.

TABLE 2-3  
ROS Class Management Objectives

ROS OBJECTIVE	ACREAGE
Semi-primitive nonmotorized (SPNM)	72,375
Semi-primitive motorized (SPM)	74,279
Roaded Natural (RN)	28,784

SMAs recommended for and designated in the RMP will contain the ROS class management objective and their prescriptions, if applicable.

### Program Direction

The outdoor recreation program will utilize the ROS as a basic tool for inventory and management to ensure for the general public the continued variety of quality recreational opportunities. Providing opportunities for back-country recreation and more developed types of recreation close to major urban areas will be stressed. Motorized vehicle recreation including off-road and off-highway vehicle use will be maintained to the greatest extent possible under existing policy. A concentrated effort will be made to locate and establish use areas and trails compatible with social and natural environments in proximity to heavily populated areas. Legal access to popular recreational areas will also be pursued.

## VISUAL RESOURCES

Visual resources will continue to be inventoried and evaluated as part of resource management activity and project planning. A contrast rating process is used as needed as a project assessment tool during environmental review of affected areas. Stipulations are established as appropriate to ensure compatibility of the project with management objectives for visual resources.

### Management Objectives

The BLM administers visual resources on public lands according to four Visual Resource Management (VRM) Class objectives (see Appendix J for descriptions). Table 2-4 displays the total acreages by class of inventoried public and nonpublic land.



TABLE 2-4  
Visual Resource Class Objective Acreages  
Within the SRA

VRM CLASS I OBJECTIVE	=	19,334
VRM CLASS II OBJECTIVE	=	828,877
VRM CLASS III OBJECTIVE	=	596,593
VRM CLASS IV OBJECTIVE	=	3,229,106
TOTAL	=	4,673,910

#### Program Direction

The VRM system will continue to be the basic tool for inventory, planning, and management of visual resources on public lands. Future efforts will concentrate on updating the visual resource inventory database and re-establishing VRM class objectives. The BLM recognizes the constantly changing natural resource base and its effects on scenic quality. A visual contrast rating will be prepared for all projects proposed within highly sensitive areas and for potentially high impact projects, regardless of location.

Congressionally designated areas are subject to Class I VRM guidelines. WSAs are subject to an interim Class II category. SMAs recommended for and designated in the RMP will contain the VRM class management objective in their prescriptions if applicable.

#### **WILDERNESS**

The 12 WSAs in the SRA will be managed under Interim Management Policy and Guidelines for Land Under Wilderness Review (USDI, BLM 1983), until the area is either added to the National Wilderness Preservation System or removed from further wilderness consideration. If designated as wilderness, the area will be managed under the Wilderness Management Policy (USDI, BLM 1981). If removed from further wilderness consideration, the area will be managed under the principles prescribed by this RMP. Preliminary wilderness recommendations for the 12 WSAs in the SRA are shown in Table 3-19.

Assessing wilderness suitability is being completed on an accelerated basis which is outside the scope of this RMP/EIS. Any discussions concerning lands within WSAs will

be confined to the RMP issues and management concerns.

#### THE PROPOSED ACTION AND ALTERNATIVES

The Council on Environmental Quality (CEQ) regulations implementing NEPA require the identification of a proposed action and/or preferred alternative. These terms are synonymous in this RMP/EIS.

Four alternative RMPs are identified in this section and analyzed in the RMP/EIS. The first alternative discussed represents a continuation of current management practices for issue areas. This is Alternative A, or the No Action Alternative. Alternative B, the preferred or the Balanced Alternative, provides for a variety of uses by incorporating features of the other three alternatives. Alternative C, the Conservation Alternative, places emphasis on maintaining or improving important environmental values and resource conservation. Alternative D, the Production Alternative, places emphasis on the production resources and economic development from public land.

These alternatives were developed as a range of reasonable combinations of resource uses and management practices in order to respond to the planning issues and management concerns, and provide, in combination with the Continuing Management Guidance and Actions, management direction for all resources. They also provide a distinct choice of potential management strategies. Each alternative conforms to FLPMA policy that the public lands be managed on the basis of multiple use and sustained yield.

"No grazing" is required by BLM policy to be analyzed as an alternative for the Vegetative Uses issue. However, this alternative was eliminated from full consideration because it would not conform to the requirement that alternatives be feasible, practical, and implementable on a resource, area-wide basis. The general impacts of implementing a No Grazing Alternative on the public lands are discussed in Appendix D. While no grazing is not feasible on a resource-area basis, it is feasible on an individual allotment basis and



is analyzed in the event that it is necessary to achieve proper management or resolve resource conflicts.

## ALTERNATIVE A

Alternative A describes the current management for resources affected by issues and how the SRA would continue to be managed as described in the Continuing Management Guidance section of this Chapter. This alternative provides a baseline for comparison of other alternatives, and may not adequately resolve the issues identified in the RMP/EIS.

The management direction for this alternative was derived from existing management decisions and guidance, such as the Divide, Stallion, and Ladron MFPs, laws, regulations, policies, and manuals, as discussed in the Continuing Management Guidance and Appendix A.

**1. Land Ownership Adjustment:** Any adjustment to existing land ownership patterns would need to be consistent with decisions outlined in existing MFPs. In the SRA the Divide MFP and the MRG amendment to the Stallion MFP have adequately addressed such actions; whereas, the Ladron MFP identifies acquisitions only and the original Stallion MFP makes no mention of land ownership adjustments. Map 2-2 depicts the general vicinity of retention and disposal areas for this alternative. This map and the existing land status map in the back pocket of this document should be used together to visualize the public land patterns in these areas. Table 2-5 displays disposal and specifically identified acquisition acreages by alternative. Specifically, 61,670 acres of public land primarily scattered throughout Catron County would continue to be identified as suitable for disposal by exchange or sale as outlined in the Divide MFP, while 34,650 acres of State and private lands within the Divide and Ladron MFPs would be considered as suitable for acquisition. Implementation of the MRG amendment to the Stallion MFP would result in the disposal by sale or color-of-title of approximately an additional 150 acres within the Rio Grande Valley. As a

part of this alternative the remaining public lands within the SRA, 1,439,440 acres, would remain in public ownership under BLM administration.

TABLE 2-5  
Specifically Identified Disposal and  
Acquisition Surface Acreages by Alternative

Alternative	Disposal Acres	Acquisition Acres
A	61,670	34,650
B	100,320	81,200
C	39,040	51,500
D	231,000	40,280

**2. Vegetative Uses:** Under this alternative the livestock grazing program within the Chupadera Mesa issue area would continue at the current authorized level, unless monitoring studies determine a need for an adjustment.

The current authorized grazing use of 28,008 Animal Unit Months (AUMs) would increase to 28,560 AUMs by the year 2008 (See Appendix C Table C-2 for a comparison of alternatives). Forage allocation to wildlife would remain constant.

No new AMPs would be implemented or developed. The two allotments with existing AMPs would continue to be maintained.

Rangeland improvements would be subject to the investment criteria in the Rangeland Improvement Policy. Livestock operator constructed projects would be processed under Section 4 permits.

The increase in vegetation would be allocated to wildlife, watershed, and livestock. The priority for forage allocation would be established on a case-by-case basis.

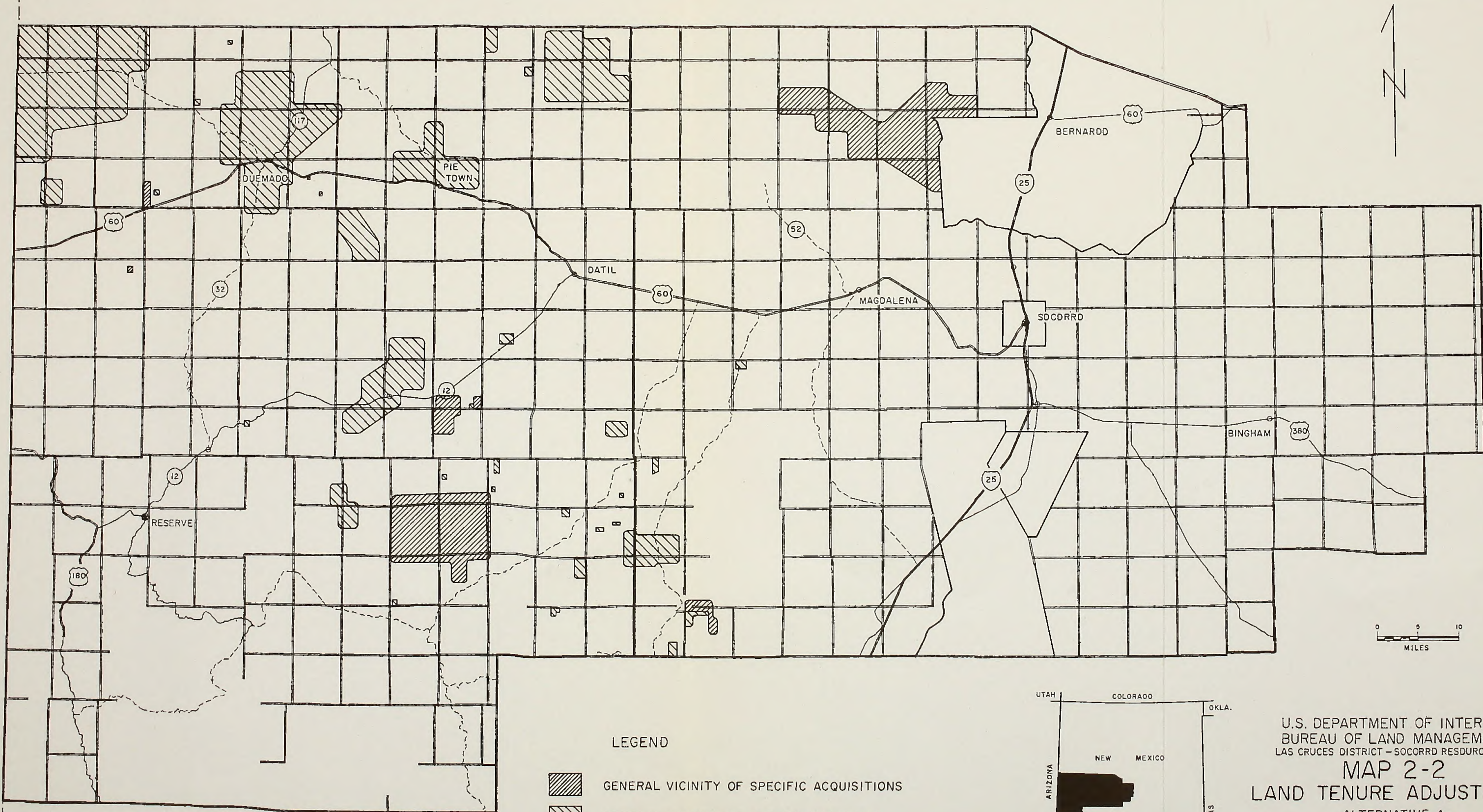
Vegetative land treatments would not be considered in the Chupadera Mesa area and East Socorro ES area.

**3. Off-Road Vehicle Use:** No new ORV designations would be implemented as the





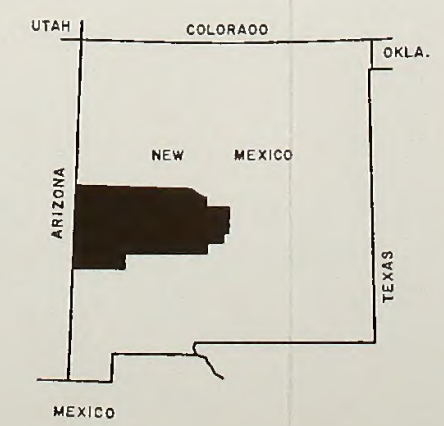
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LEGEND

-  GENERAL VICINITY OF SPECIFIC ACQUISITIONS
-  GENERAL VICINITY OF SPECIFIC DISPOSALS



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-2**  
**LAND TENURE ADJUSTMENT**  
ALTERNATIVE A







entire SRA has been designated as either open, limited, or closed to ORV use through previous planning documents. All public land would remain as currently designated. Emergency closures would be implemented on a case-by-case basis. Currently, the ORV designations for the SRA are as follows: 584,110 acres as open, 936,500 acres as limited; and no acres closed (see Map 2-3).

4. Access: The BLM easement acquisition program would continue using management decisions derived from existing land-use plans, and would develop a prioritization of easement acquisition needs. In areas where easement acquisition needs are not specifically identified, proposals would be evaluated on a case-by-case basis. Under this alternative the backbone of BLM's transportation system would continue to be the existing network of Federal, State, and County road systems (see Map 2-4). Access would be acquired as funding and manpower allow.

5. Special Management Areas: The SRA would continue to manage the following SMAs which have already been designated: Bat Cave, (included in Pelona Mountain proposed SMA) Tinajas ACEC, Fort Craig, Datil Well Campground, and Teypama (see Appendix L).

No new SMAs would be identified under this alternative at the present time.

6. Wild Horse Management: Wild horse numbers would continue to be maintained at approximately 32 horses in the existing WHMA in accordance with the Wild and Free Roaming Horse and Burro Act, as amended.

Wild horse round-ups would be conducted as needed to maintain the long-term average of 32 horses. Selective removal of wild horses would be initiated to leave better breeding stock.

7. Coal Leasing Suitability/Assessment:

Under this alternative, there would be no lands brought forward for leasing consideration. Appendix M describes methodology and analysis for developing coal land-use planning.

## Management Concerns

### Fluids Mineral Leasing

Under this alternative all future fluid mineral leases would continue to be issued with the standard BLM oil and gas or geothermal lease terms contained in all fluid leasing contracts (see Appendix B, Figure B-1). In addition to the standard terms, individual or combinations of stipulations would continue to be applied to the specific areas identified in the Socorro District's 1982 Oil, Gas, and Geothermal Leasing EA. All but one of the stipulations allow increased management discretion on surface disturbing activities in order to ensure protection of known sensitive resources. The remaining stipulation requires temporary evacuation of leases within the White Sands Missile Range (WSMR) Extension area during test firings. Examples of the specific stipulations to be applied under this alternative are shown in Appendix B.

Approximately 872,000 acres of Federal mineral estate would continue to be subject to one or more of the current stipulations. Table 2-6 exhibits the subject and acreage covered by each stipulation. Approximately 118,000 acres or 5 percent of the BLM-administered mineral estate is covered by only one of the eight stipulations concerning sensitive resource values; 11 percent or 251,000 acres of the mineral estate is covered by two or more of the stipulations concerning sensitive resource values. In addition 503,000 acres or 22 percent of the Federal mineral estate would be covered under the WSMR Extension area stipulation. Approximately one-fifth of the area, or 109,000 acres included within the WSMR Extension area stipulation, is also covered by one or more of the stipulations which concern sensitive resources. Overall approximately 38 percent of the entire Federal mineral estate managed by the SRA [this figure does not include U.S. FS, U.S. FWS, U.S. Bureau of Reclamation (BOR), or military withdrawals] would be covered by one or more stipulations.

TABLE 2-6  
Existing Fluid Leasing Stipulations \*

Stipulation	Subject	Acres	% of Total **
Soc-1	Critical Erosion Watershed	57,000	3.0
Soc-2	T&E Plants	12,000	0.5
Soc-3	Commercial Timber	24,000	1.0
Soc-4	T&E Animals	15,000	0.6
Soc-5	Visual Resource Concern	114,000	5.0
Soc-6	Cultural Resource	13,000	0.6
Soc-7	R&PP or C&MU	6,000	0.3
NM-5	WSMR Extension Area	503,000	22.0
NM-7	WSA	315,000	14.0

\* For detailed definitions and explanations of these stipulations, see Appendix B.

\*\* Total BLM-administered mineral estate in the SRA is approximately 2.2 million acres.

#### Right-of-Way Exclusion and Avoidance Areas

Under this alternative the SRA would continue to recognize the existing right-of-way corridor designations identified in previous land-use plans and amendments; namely El Paso Electric, Tucson Electric Power, and U. S. Highway 60 corridors (see Map 2-5). No new right-of-way corridors would be established and no exclusion or avoidance areas would be identified. Major new rights-of-way would need to be placed within one of these corridors while routine, smaller new rights-of-way within the SRA would be processed on a case-by-case basis.

## ALTERNATIVE B

Alternative B attempts to resolve the planning issues by incorporating concepts proposed in both the resource conservation and resource production alternatives as well as actions intermediate between the two.

1. Land Ownership Adjustments: The implementation of this alternative would result in the eventual disposal of 100,320 acres of public land located in various disposal blocks throughout the SRA. The

acquisition of 81,200 acres of non-public lands would be pursued within SMAs as a high management priority. Map 2-6 depicts the retention and disposal areas for this alternative. This map and the existing land status map in the back pocket of this document should be used together to visualize the public land patterns in these areas. Table 2-5 displays disposal and specifically identified acquisition acreages by alternative. Public land totalling 1,420,290 acres located within larger retention blocks would be maintained in public ownership under the administration of the BLM, yet exchange opportunities which serve the public interest may be entertained within these retention blocks to further consolidate public and non-public land holdings. In all disposal actions exchanges would be considered the preferred method of ownership adjustment, with sales always being considered as the lowest priority. R&PP patent applications would continue to be processed on a case-by-case basis and may be allowed in retention areas if determined to be in the public's best interest.

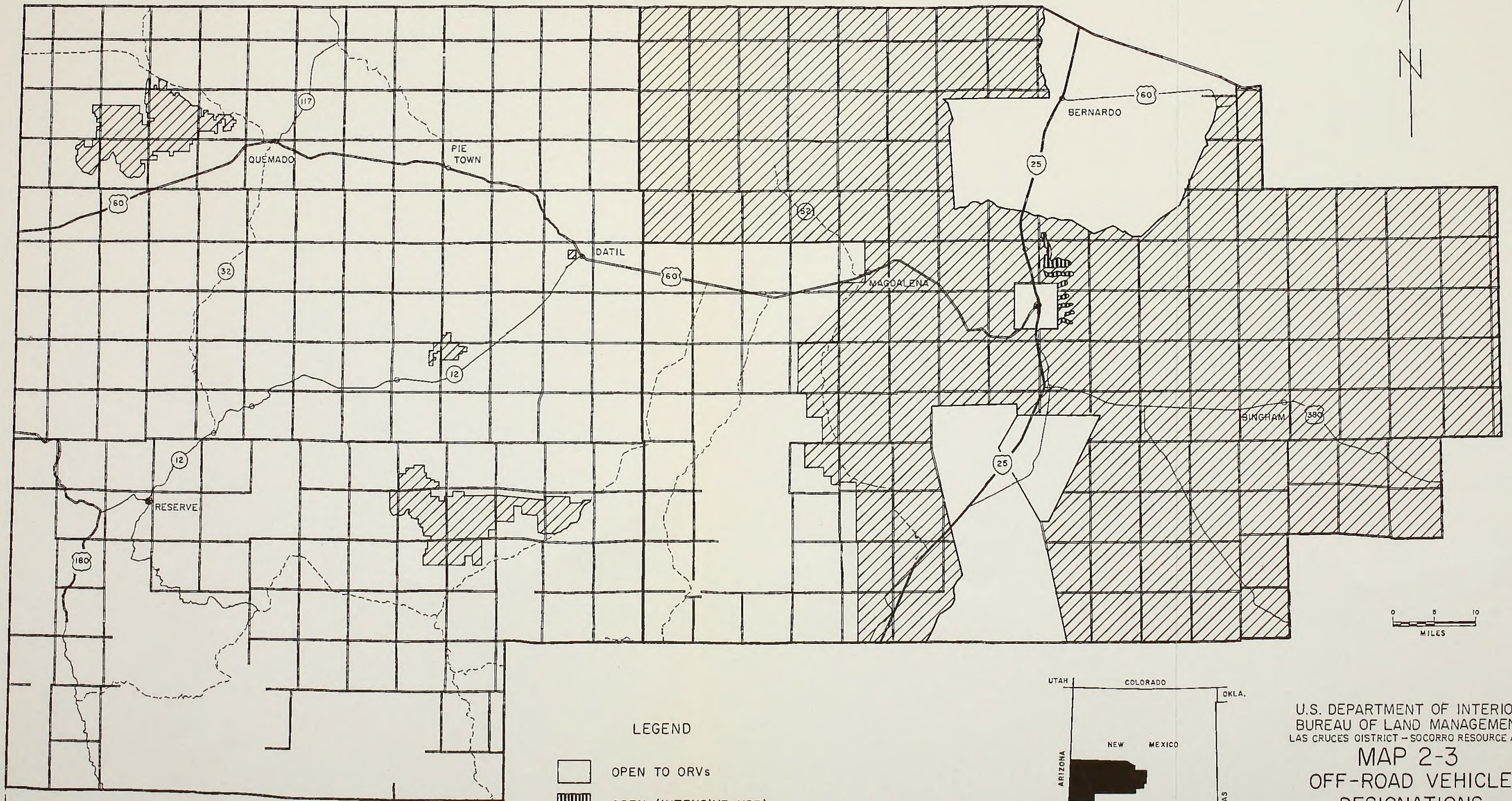
The BLM would retain two large blocks of public land, one on the east side of the Rio Grande Valley and another from Pie Town west to the Arizona border. Public lands within the vicinities of Horse Mountain, Ladron Mountain, and Pelona Mountain would be retained in public ownership. Also large portions of public lands in the Plains of San Augustine and all public lands surrounding the Bosque del Apache and Pedro Armendaris Land Grant would be retained. BLM would divest its interests in the northern portion of Chupadera Mesa and north of U.S. Highway 60 from Magdalena to Pie Town. Public lands within the Rio Grande Valley would also be disposed of as part of this proposal.

The 81,200 acres of specifically identified non-public land to be acquired as part of this alternative would be in support of a balance of resource production and resource conservation-oriented SMAs. An unknown amount of non-public land located within BLM retention areas would be considered as potentially suitable for acquisition to enhance various BLM resource programs as part of this alternative.



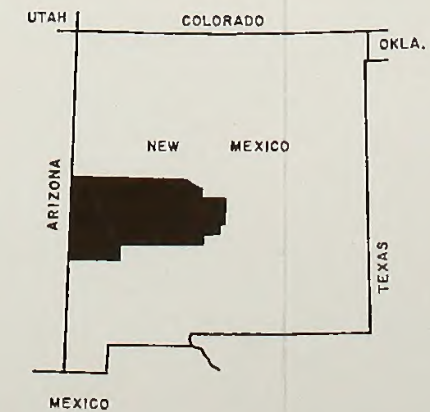
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# LEGEND

- OPEN TO ORVs
- OPEN (INTENSIVE USE)
- LIMITED TO EXISTING ROADS AND TRAILS



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-3**  
**OFF-ROAD VEHICLE**  
**DESIGNATIONS**  
ALTERNATIVE A

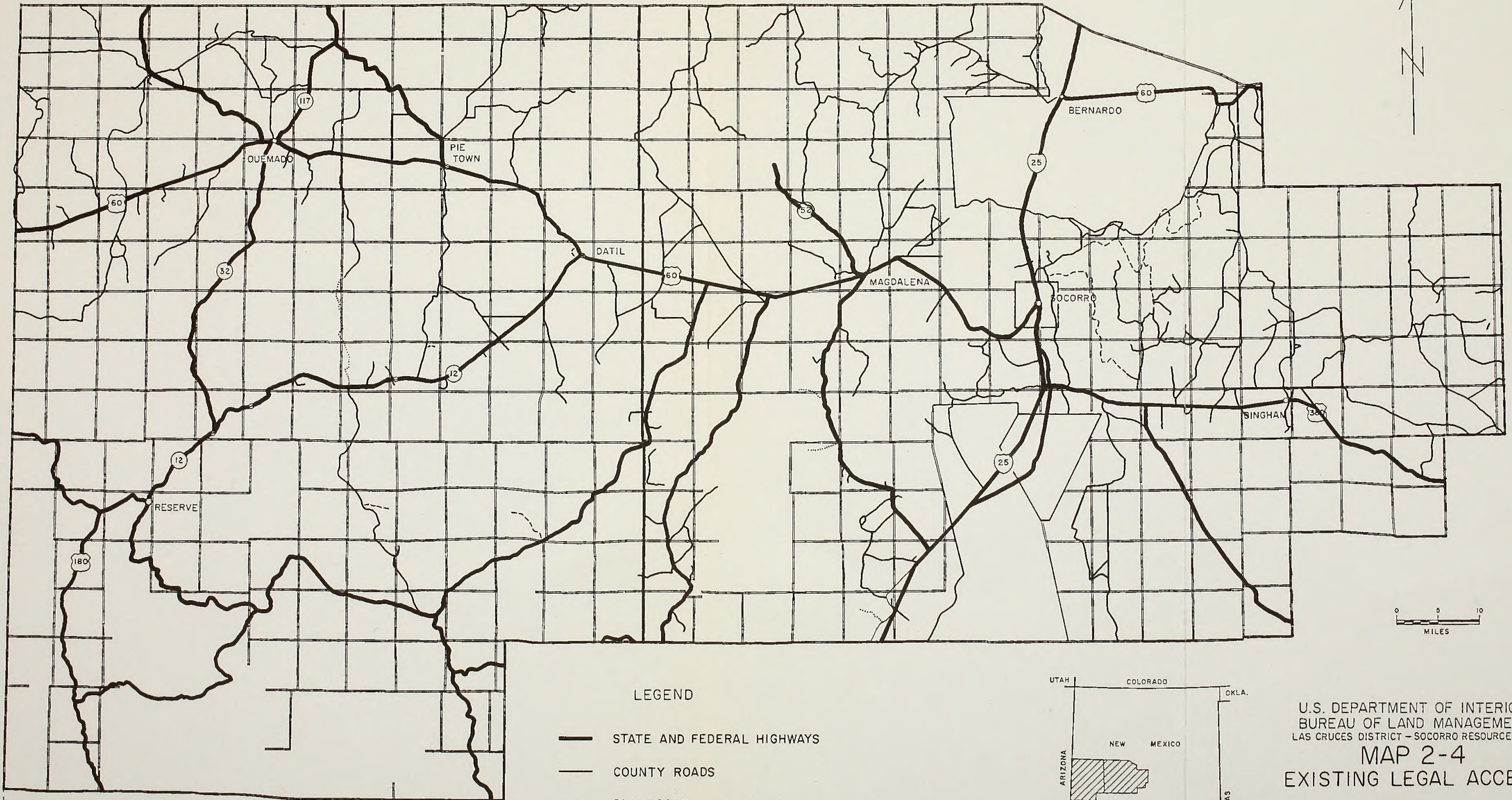






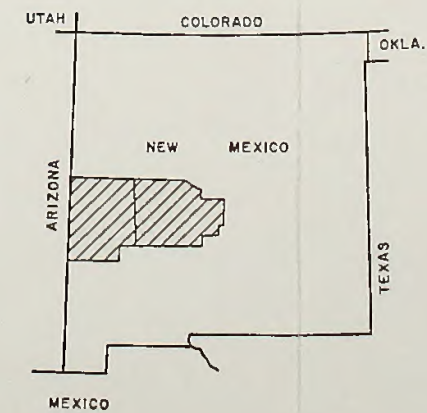
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LEGEND

- STATE AND FEDERAL HIGHWAYS
- COUNTY ROADS
- - - BLM ROADS
- ..... FOREST SERVICE ROADS



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-4**  
EXISTING LEGAL ACCESS

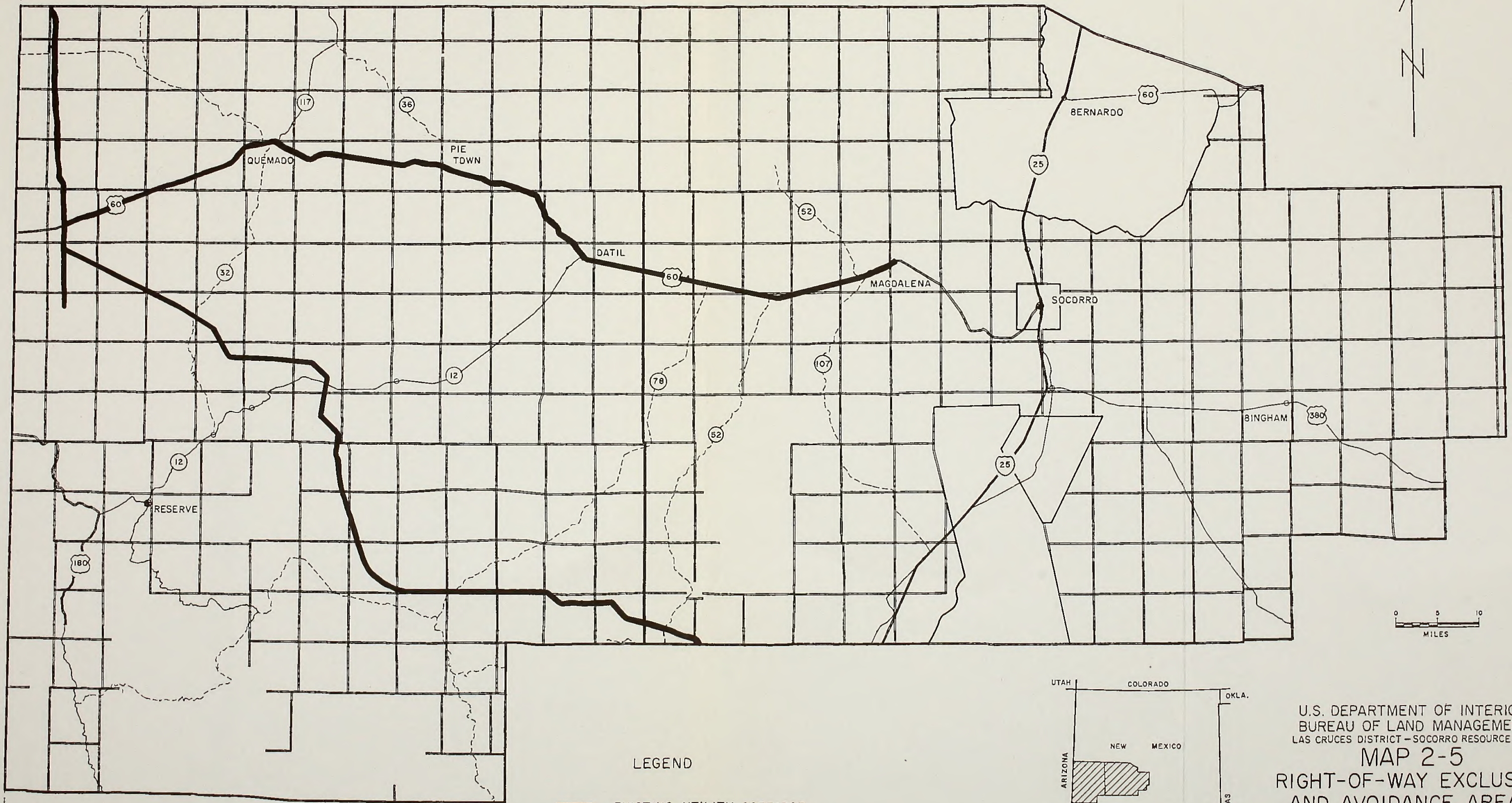




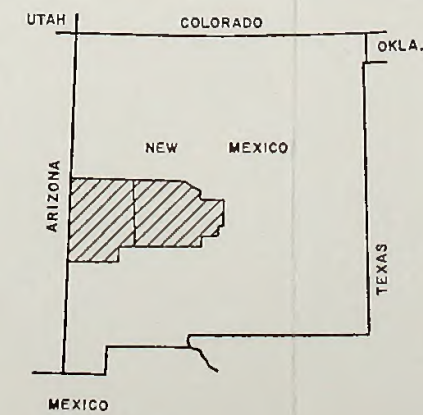


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LEGEND  
 ——— EXISTING UTILITY CORRIDOR



U.S. DEPARTMENT OF INTERIOR  
 BUREAU OF LAND MANAGEMENT  
 LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-5**  
 RIGHT-OF-WAY EXCLUSION  
 AND AVOIDANCE AREAS  
 ALTERNATIVE A

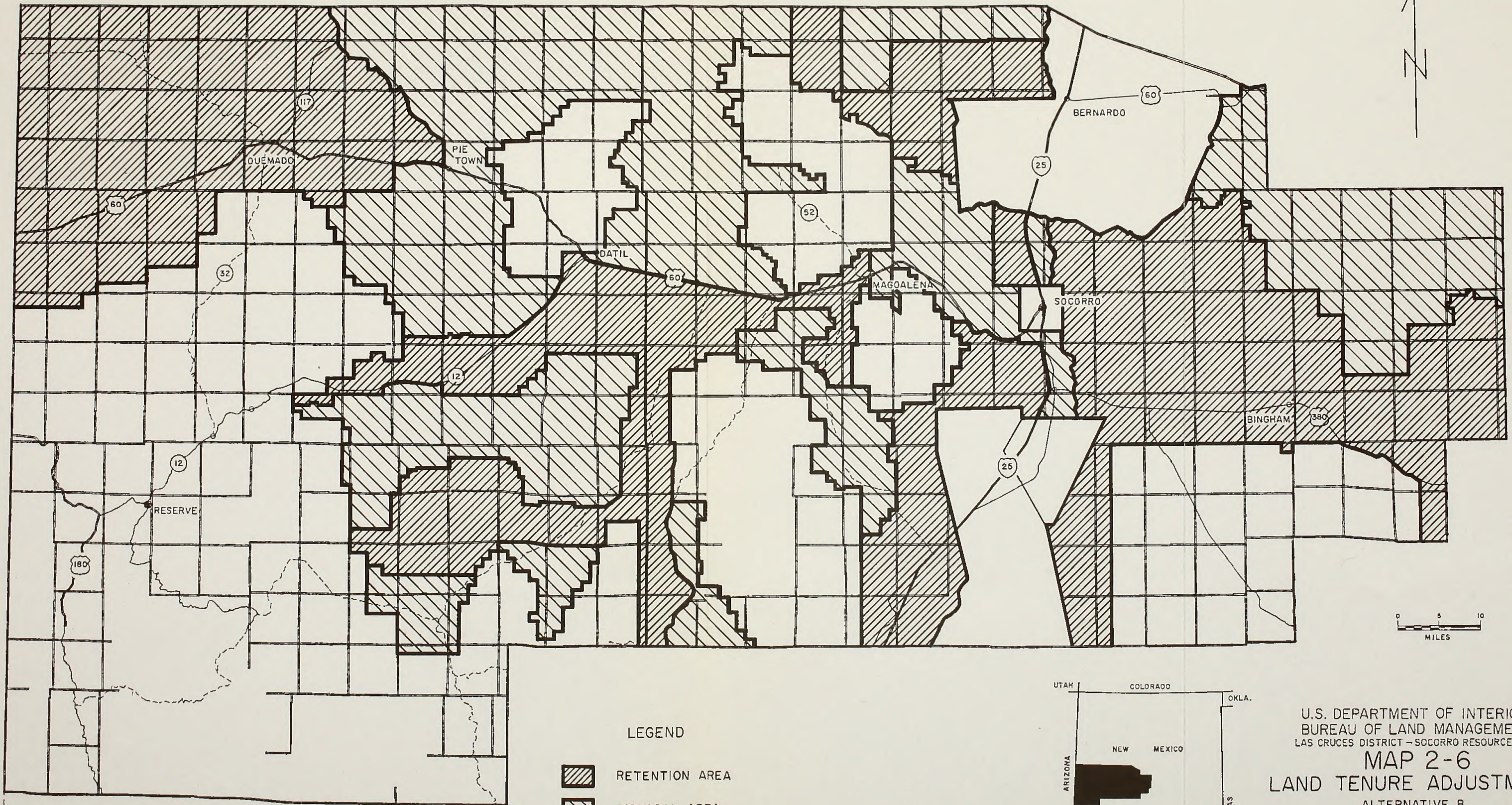






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U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-6**  
**LAND TENURE ADJUSTMENT**  
ALTERNATIVE B







2. **Vegetative Uses:** This alternative is designed to provide the most balanced use between livestock and other resources. Because current range condition and current management are satisfactory and there are no known resource conflicts, the allotments on Chupadera Mesa have been placed in the "M" category, with no adjustments in grazing use being made. The isolated problem areas within allotments will come under the "I" category designation and subject to the actions prescribed.

This alternative would increase the authorized grazing use from 28,008 AUMs to 29,948 AUMs by implementing the management actions identified in Appendix C, Table C-2.

New AMPs would be developed on seven allotments. Existing AMPs would continue to be followed on the Black Hills Ranch and Largo Canyon Allotments, unless monitoring indicates that a change in management is needed. Three allotments would be managed non-intensively.

This alternative would implement or authorize rangeland improvements and vegetative land treatments as shown in Appendix C, to benefit multiple-use resources, improve livestock distribution, increase forage production, implement AMPs and improve ecological condition. Management would be directed to those lands with poor condition range and areas of uneven livestock distribution.

The forage increase of 2,270 AUMs from management practices and vegetative land treatments would be allocated to the various resources on a case-by-case basis. The priority would be given to wildlife first on those allotments where no forage is presently allocated to wildlife. Approximately 330 AUMs will be allocated to benefit wildlife. On allotments where AUMs are presently allocated to wildlife, priority would be given to livestock, then wildlife and watershed.

Vegetative land treatments are proposed on approximately 4,170 acres of public land within the Chupadera Mesa Area. Target species include snakeweed - 1,420 acres, cholla - 950 acres, and creosotebush - 400 acres. Burning is proposed on 1,400 acres (sacaton spp.). Approximately 160,000 acres

are identified for treatment within the East Socorro Grazing ES area. Target species include creosotebush - 20,000 acres, snakeweed - 25,000 acres, mesquite - 4,000 acres, sand sagebrush - 17,000 acres, cholla - 8,000 acres, and pinon-juniper - 2,500 acres. Approximately 80,000 acres are identified under the Nogal HMP for the improvement of wildlife habitat.

No treatments would occur in areas with rare, endemic, or T&E plant species habitat.

3. **Off-Road Vehicle Use:** Under this alternative the majority of the SRA would be designated as either "open" or "limited to existing roads and trails", with some closures associated primarily with SMAs. Additionally, some "seasonally limited" designations would occur.

Under this alternative, 785,010 acres would be designated open, 668,200 acres limited to existing roads and trails, 67,400 acres seasonally limited from November through March, and approximately 36 miles of trails closed to ORV use (see Map 2-7).

An area of approximately 1,170 acres would be managed for intensive ORV use by motorcycles and designated open. These areas have received historical ORV use due to their proximity to Socorro. An EA would be prepared to analyze the impacts of allowing intensive ORV use, such as motorcycle events, in these areas.

4. **Access:** The implementation of this alternative would enhance access needs for a balanced mix of resource conservation and resource production-oriented programs. Acquiring legal access into presently inaccessible lands or into areas where only physical access exists would be a priority. The closure and rehabilitation of existing undesirable vehicle routes would take precedence as priorities are set. The nine access tracts identified by letter in Appendix F, Map F-1 would be prioritized, with activity plans being developed in the future for each tract to further analyze access concerns within the boundaries based upon the needs of a balanced mix of resource conservation and resource production-oriented programs. The

access tracts are identified in priority order as follows:



5. Special Management Areas: Thirty SMAs totaling 348,200 acres are being identified under this alternative (Map 2-8). Table 2-7 displays the names of the SMAs, while Appendix L provides a map, a detailed description, and a summary of the management goals and prescriptions for each area.

TABLE 2-7  
SPECIAL MANAGEMENT AREAS FOR ALTERNATIVE B

SMA	Acres	SMA	Acres
*Ladron Mountain	62,460	Walnut Canyon	1,730
Pelona Mountain	78,320	The Box	320
Divide Tin	62,130	Teypama	17
Agua Fria	10,770	Newton Site	40
Cerro Pomo	8,840	Playa Pueblos	320
*Sawtooth	120	Rio Salado	6,400
Soaptree	1,200	Town of Riley	600
Horse Mountain	7,720	Mogollon Pueblo	640
Stallion	22,840	Mockingbird	11,970
Puertecito	10,040	Gap	
Fence Lake	32,840	San Lorenzo Canyon	4,800
*Tinajas	3,520	*San Pedro	1,200
Fort Craig	160	Iron Mine Ridge	800
Continental	7,680	Taylor Canyon	320
Divide National		Harvey Plot	3
Scenic Trail		Zuni Salt	5,760
Datil Well	640	Lake	
Campground			

\*ACEC

6. Wild Horse Management: Wild horse numbers would average 50 horses in the Bordo Atravesado wild horse herd area.

The wild horse herd would be monitored and removed as needed to maintain the horse population at an average of 50 horses. Selective removal of wild horses would be initiated to leave better breeding stock. Wild horses with good conformation and breeding characteristics would be introduced to the herd.

## 7. Coal Leasing Suitability/Assessment:

Under this alternative, areas of maximum coal development potential would be brought forward for leasing. All multiple-use screens would be mitigated. This alternative would carry forward 27,640 acres for further leasing consideration (Map 2-9).

### Management Concerns

#### Fluid Mineral Leasing

Under this alternative, all future fluid mineral leases would be issued using the standard terms listed on BLM Form 3100-11. The WSMR Extension area evacuation stipulation (NM-5) would also be carried forth. In addition one or more of the developed stipulations would be applied to fluid leasing where appropriate (Map 2-10). Table 2-8 briefly describes these four proposed fluid leasing stipulations.

TABLE 2-8  
Abbreviated Definitions of Proposed  
Fluid Leasing Stipulations \*

SRA-1 Surface disturbing activities will be allowed only when specifically approved in writing by the authorized officer to ensure protection of all significant resource values.

SRA-2 Surface disturbing activities will be allowed only during specified time periods unless specifically approved by the authorized officer.

SRA-3 No surface occupancy will be allowed.

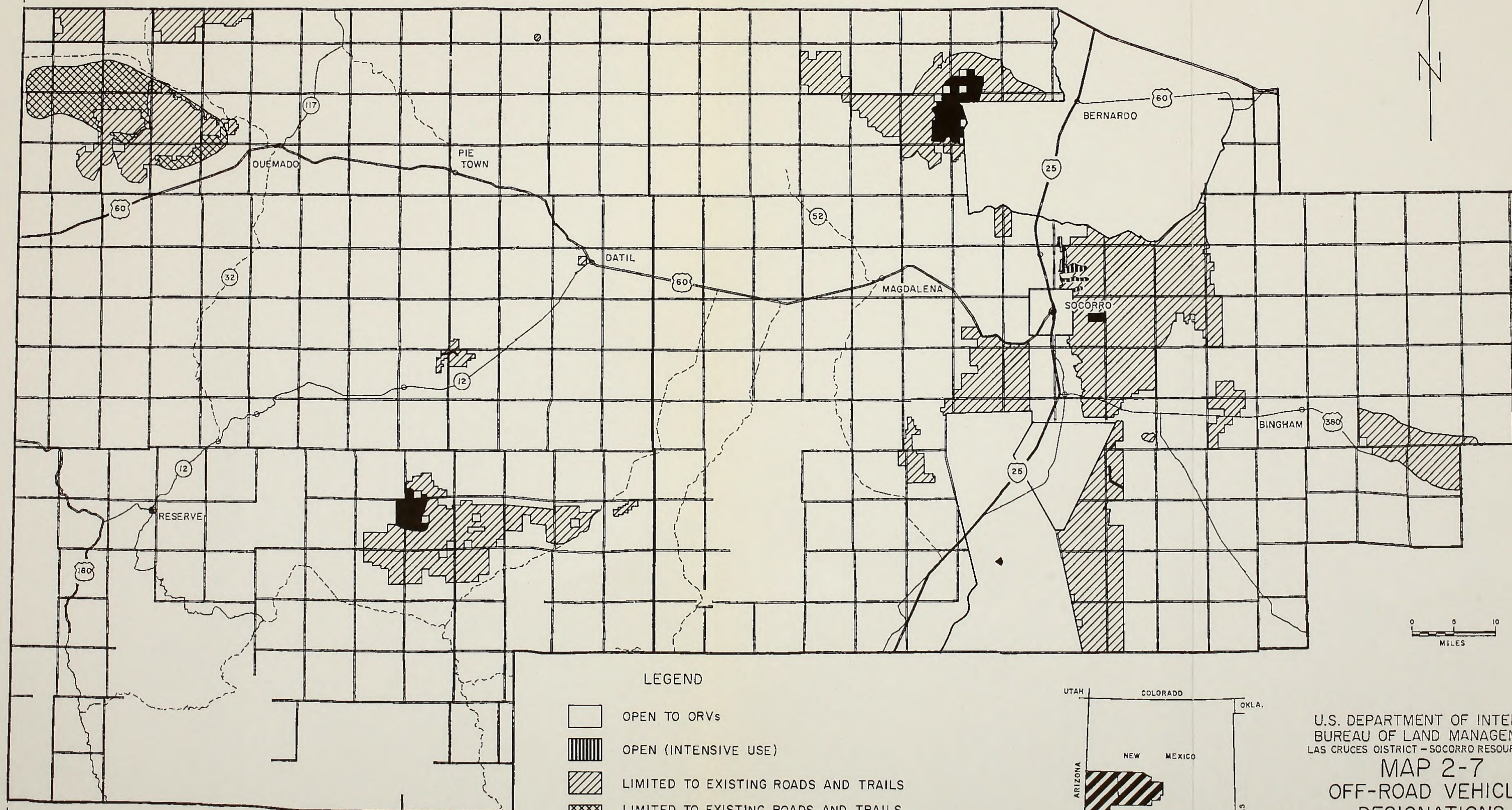
SRA-4 Surface use or occupancy will be strictly controlled in these areas to mitigate special values, special purposes, or areas that require special attention. Use or occupancy will be authorized only when it has been demonstrated that the area is essential for operations. The lessee/operator may be required to submit a surface use and operations plan to the BLM for the purpose of mitigating these special concerns.

\* For detailed definitions and explanations of these proposed fluid leasing stipulations, see Appendix B.








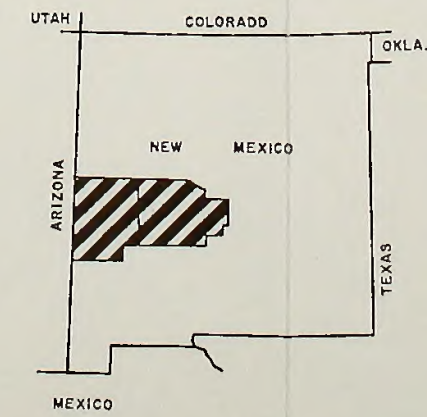
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LEGEND

-  OPEN TO ORVs
-  OPEN (INTENSIVE USE)
-  LIMITED TO EXISTING ROADS AND TRAILS
-  LIMITED TO EXISTING ROADS AND TRAILS (November 1 - March 31)
-  CLOSED TO ORVs



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-7**  
**OFF-ROAD VEHICLE**  
**DESIGNATIONS**  
ALTERNATIVE B

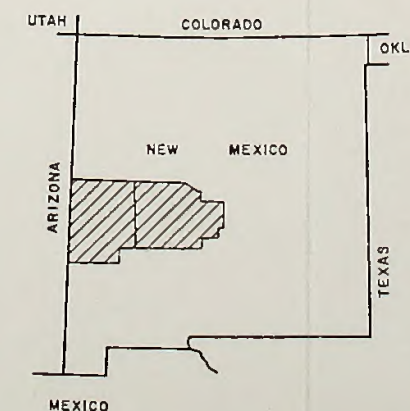
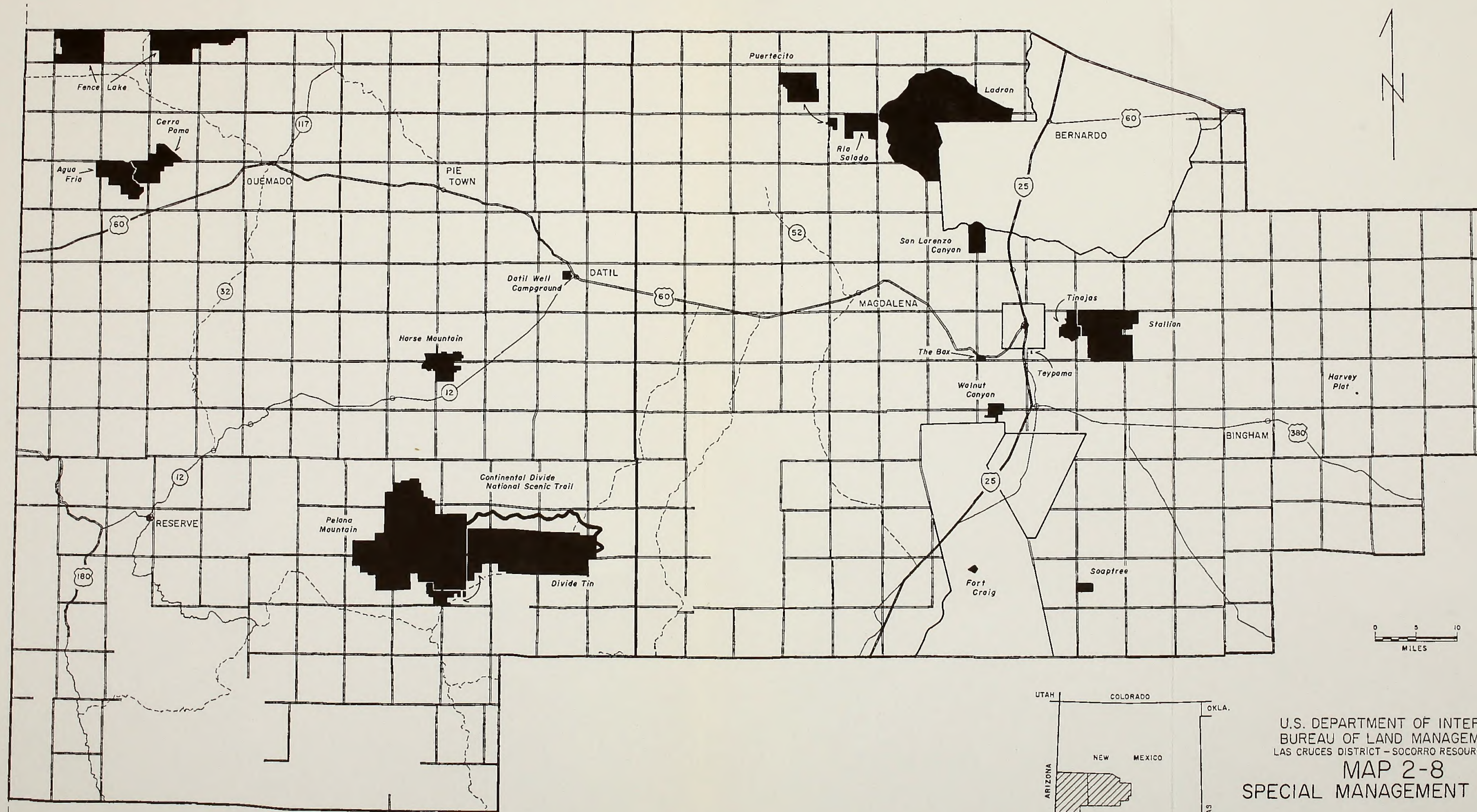






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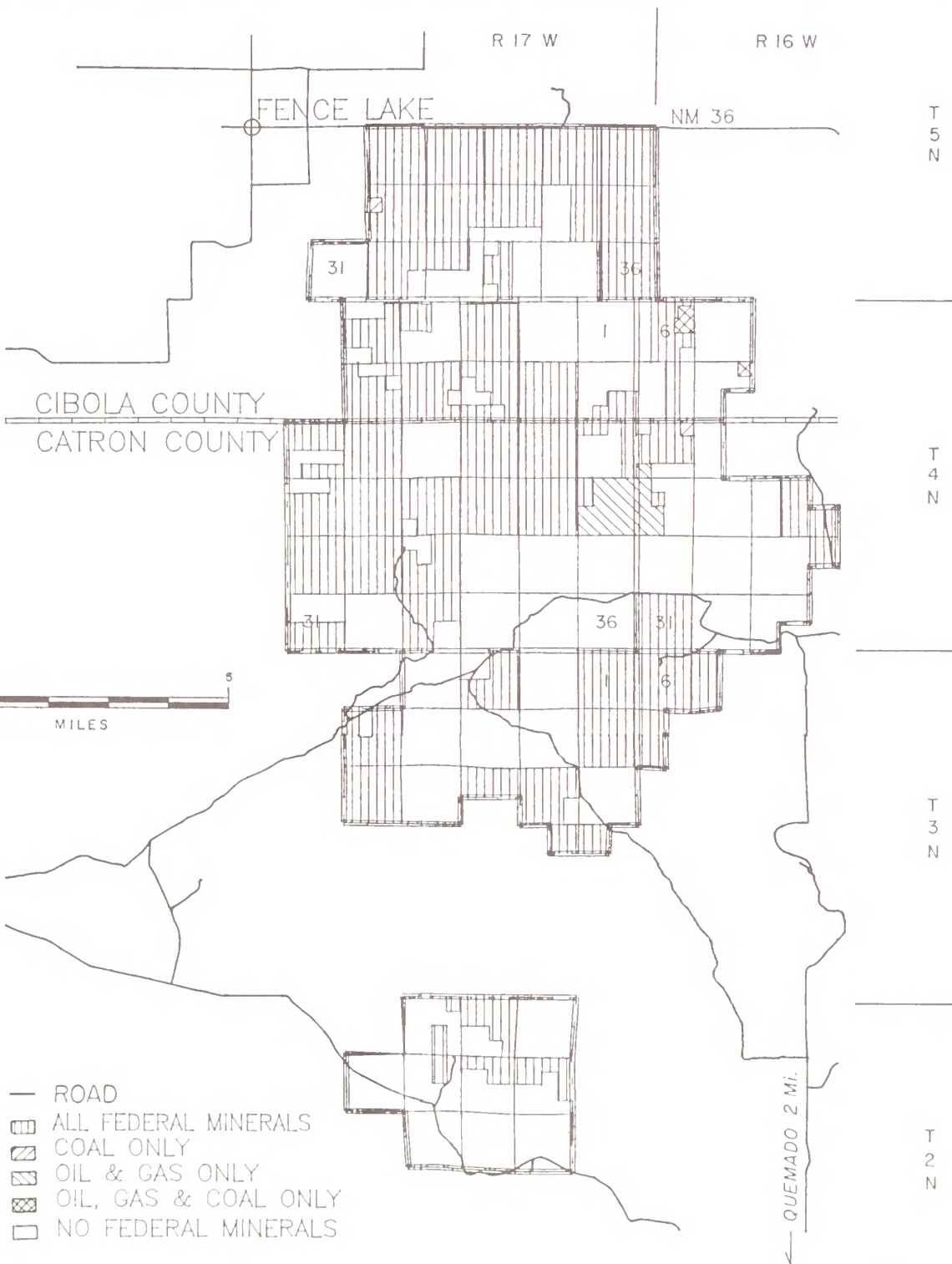


U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-8**  
SPECIAL MANAGEMENT AREAS









U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
MAP 2-9  
SAN AUGUSTINE COAL AREA  
MAXIMUM COAL DEVELOPMENT POTENTIAL AREA

The four proposed fluid leasing stipulations are designed to provide varying levels of control over surface disturbing activities. The SRA-4 stipulation is primarily designed to notify operators of potentially significant resource conflicts which must be mitigated pursuant to all applicable laws and regulations. The lessee/operator may be required to submit a surface use and operations plan that is satisfactory to the BLM. SRA-2 allows management discretion in respect to surface activities within a specified seasonal interval. SRA-1 provides the same management discretion as SRA-2 stipulations, but on a continual basis. SRA-1 and SRA-2 may range from minimally to moderately restrictive depending on the resources involved. SRA-3 prohibits surface occupancy of leases and is severely restrictive to resource development.

Approximately 1.1 million acres of the total 2.2 million acres of Federal mineral estate in the SRA, or about 50 percent of the area available for fluid leasing, would be subject to one or more of the proposed stipulations. See Table 2-9 for acreages of total BLM-administered mineral estate covered by each stipulation under each alternative. Note that some areas would have overlapping stipulations.

TABLE 2-9  
Acreages Under Proposed Fluid  
Leasing Stipulations

Stipulation No.	Alternatives		
	B (Balanced)	C (Conservation)	D (Production)
SRA-1	9,000	47,000	0
SRA-2	194,000	134,000	0
SRA-3	14,000	389,000	21,000
SRA-4	302,000	0	6,000
NM-5	411,000	415,000	497,000
SRA-1&2*	124,000	0	0
SRA-1&NM-5*	1,000	45,000	0
SRA-3&NM-5*	6,000	44,000	6,000
SRA-4&NM-5*	86,000	0	0
TOTAL	1,147,000	1,074,000	530,000

\* The double stipulations indicate acres of overlap which are not added into the single, individual stipulation.

Under this alternative, approximately 6 percent of the BLM-administered mineral estate is covered by SRA-1, the most discretionary stipulation. About 14 percent of the BLM-administered mineral estate is subject to the seasonal management stipulation (SRA-2) and about 1 percent of the leasable land is under the "no surface occupancy" stipulation (SRA-3). Additionally, about 17 percent would be subject to the least restrictive (SRA-4) stipulation. The WSMR Extension Area stipulation (NM-5) covers about 22 percent of the leasable land.

#### Right-of-Way Exclusion and Avoidance Areas

The SRA would eliminate existing utility corridor designations and establish right-of-way exclusion areas totalling approximately 15,040 acres of public land. These areas would consist of all VRM Class I areas and those areas known to contain Federally-listed T&E plant species. Right-of-way avoidance areas would be established totalling approximately 383,752 acres of public land and would consist of all VRM Class II areas and all proposed SMAs with the exception of Sawtooth and the Divide Tin (see Map 2-11).

## ALTERNATIVE C

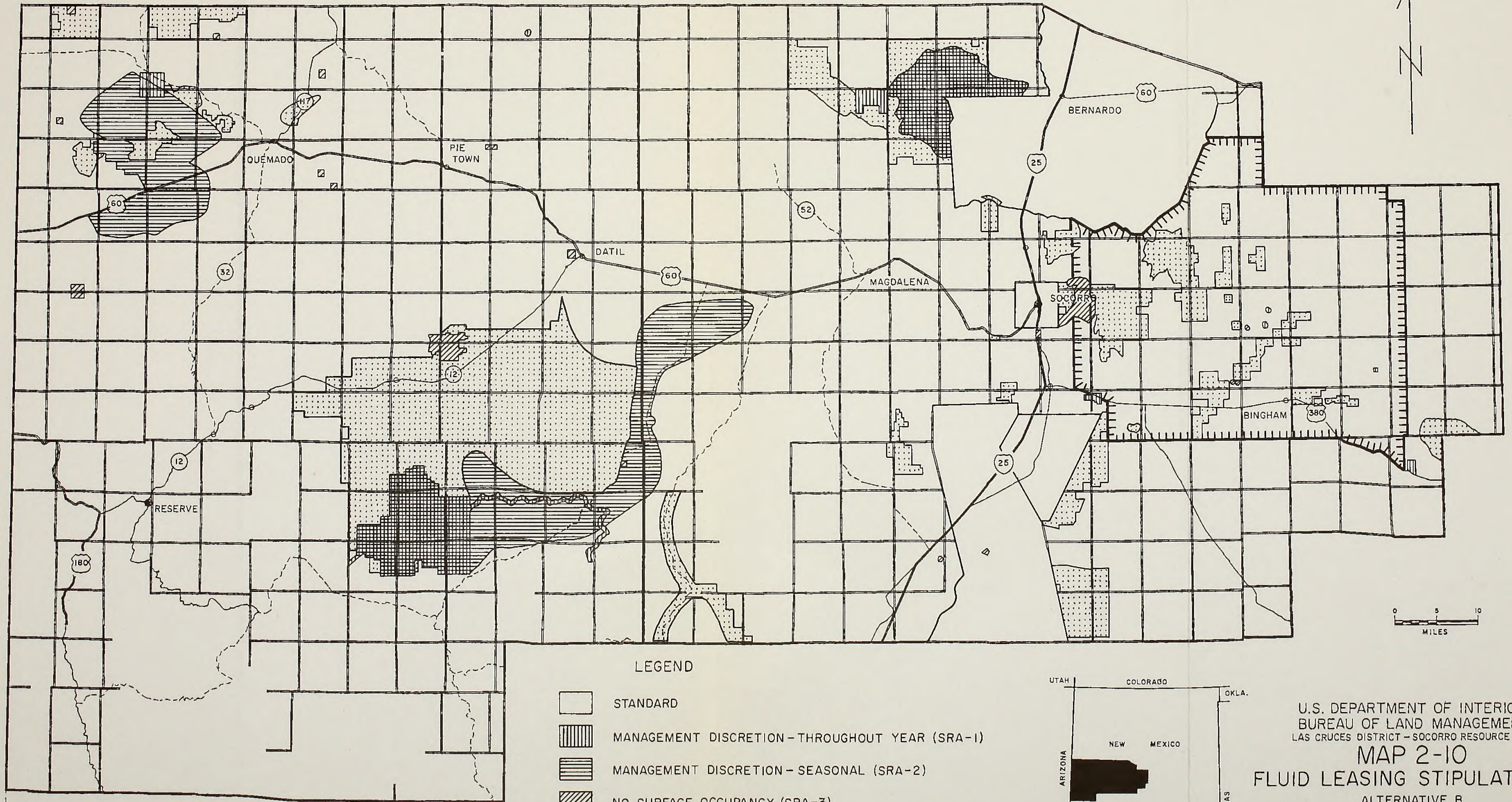
Alternative C attempts to resolve the planning issues while placing primary emphasis on maintaining or improving important environmental values.

The conservation aspect of the recreation, visual resources, wilderness, ORV, paleontology, cultural, wildlife, watershed, and other resource conservation-oriented programs are emphasized under this alternative. In addition, various land acquisitions are proposed to enhance management of these particular programs. The goal of this alternative is to change present management direction so that the seven issues are resolved in a manner that places highest priority on the maintenance or improvement of environmental values. Management of various other resources would continue in areas not emphasized under this alternative.









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LEGEND

-  STANDARD
-  MANAGEMENT DISCRETION - THROUGHOUT YEAR (SRA-1)
-  MANAGEMENT DISCRETION - SEASONAL (SRA-2)
-  NO SURFACE OCCUPANCY (SRA-3)
-  MITIGATION OF SPECIAL ISSUES (SRA-4)
-  WHITE SANDS MISSILE RANGE EVACUATION AREA (NM-5)



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-10**  
**FLUID LEASING STIPULATIONS**  
ALTERNATIVE B

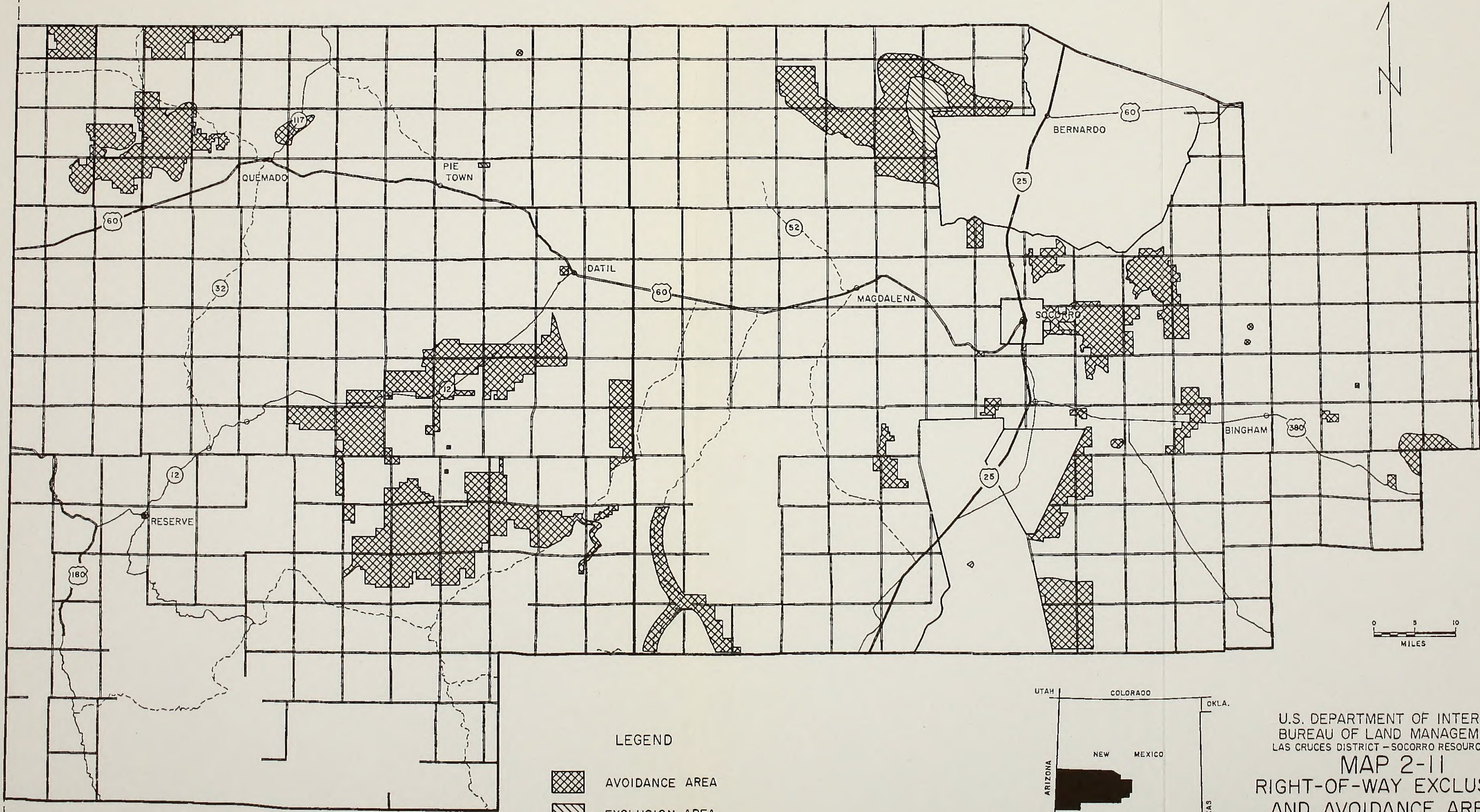








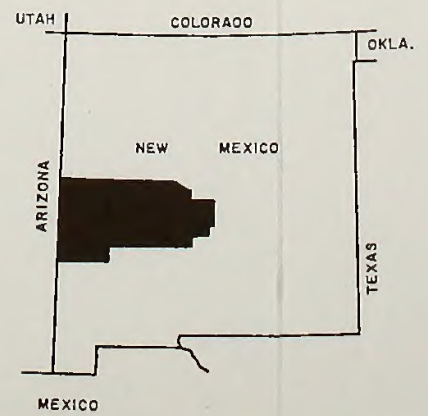
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LEGEND

-  AVOIDANCE AREA
-  EXCLUSION AREA



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-11**  
RIGHT-OF-WAY EXCLUSION  
AND AVOIDANCE AREAS  
ALTERNATIVE B







**1. Land Ownership Adjustments:** The implementation of this alternative would result in the eventual disposal of 39,040 acres of public land located in various disposal blocks throughout the SRA. The acquisition of 51,500 acres of non-public lands would be pursued within SMAs as a high management priority. Map 2-12 depicts the retention and disposal areas for this alternative. This map and the existing land status map in the back pocket of this document should be used together to visualize the public land patterns in these areas. Table 2-5 displays disposal and specifically identified acquisition acreages by alternative. Public lands totalling 1,481,570 acres located within large retention blocks would be maintained in public ownership under the administration of the BLM, yet unlimited exchange opportunities which serve the public interest may be entertained within these retention blocks to further consolidate public and non-public land holdings. In all disposal actions, exchanges would be considered the preferred method of ownership adjustment, with sales always being considered as the lowest priority. R&PP patent applications would continue to be processed on a case-by-case basis and may be allowed in retention areas if determined to be in the public's best interest.

As part of this alternative, two notable disposal areas are evident. The first area, located in the extreme northeastern portion of the SRA and sandwiched between a large block of State land and the Seville Land Grant, is approximately 20 sections of public land which has been identified for disposal. The second disposal area consists primarily of the scattered public lands north of US Highway 60 between Socorro and Magdalena. Nearly 33 sections of public land within this area would be transferred from public ownership under this alternative.

The 51,500 acres of specifically identified non-public land to be acquired as part of this alternative would be in support of resource conservation-oriented SMAs. An unknown amount of non-public land located within BLM retention areas would be considered as potentially suitable for acquisition to enhance BLM resource-oriented programs as part of this alternative.

**2. Vegetative Uses:** The vegetation resource would be managed to protect or improve vegetative cover and provide forage for non-livestock uses, particularly, wildlife, watershed, and visual resources.

The authorized grazing use of 28,008 AUMs would be decreased by 2,500 AUMs to 25,508 AUMs. This reduction in livestock grazing use would adequately sustain the number of wildlife, and provide sufficient ground cover and vegetation stubble for watershed protection.

This alternative identifies the development of four AMPs: Carrizozo, Chupadera Mesa, Dragoo Tank, and Gallacher North allotments. AMPs would be designed to enhance wildlife habitat. Specific actions are identified in Appendix C, Table C-2.

The two existing AMPs would maintain their present management or be revised.

All new rangeland improvements would be designed primarily to benefit wildlife and watershed resources.

Vegetation derived through grazing management actions and from vegetative land treatments would be reserved for the enhancement of wildlife habitat and watershed. No increases to livestock would be made until wildlife and watershed needs have been met.

Approximately 1,550 acres within the Chupadera Mesa Area are proposed for treatment under this alternative. Target species include snakeweed - 520 acres and creosotebush - 200 acres. Burning is proposed on 830 acres of sacaton spp.. An increase of 1,590 AUMs is anticipated from vegetative land treatment and management.

Treatment of 80,000 acres of creosotebush are identified in the East Socorro ES area under the Nogal HMP for improvement of wildlife habitat. No treatments would occur in areas with rare, endemic, or T&E plant species.

**3. Off-Road Vehicle Use:** Under this alternative, SMAs would be "limited" or "closed" to vehicle use as described in the planned actions (See Appendix L). In

addition, other areas outside SMAs would be limited to existing roads and trails, with the remainder of the SRA open to vehicle use.

Under this alternative 690,740 acres would be designated as open; 581,540 acres would be designated as limited to existing roads and trails; and 248,300 acres would be designated as closed to ORV use (see Map 2-13).

4. Access: The implementation of this alternative would emphasize accommodating access needs for resource conservation-oriented programs. Acquiring legal access into presently inaccessible lands or into areas where only physical access exists would be a priority. The closure and rehabilitation of existing undesirable vehicle routes, however, would also be considered as important. The nine access tracts (see Appendix F, Map F-1) would be prioritized, with activity plans being developed in the future for each tract to further analyze access concerns within the boundaries based upon the needs of various resource conservation-oriented programs. The access tracts are identified in priority order as follows:



5. Special Management Areas: Twenty-nine SMAs totaling 286,070 acres are being identified under this alternative. Table 2-10 displays the names of the SMAs, while Appendix L provides a map, a detailed description, and a summary of the management goals and prescriptions for each area.

TABLE 2-10  
SPECIAL MANAGEMENT AREAS FOR ALTERNATIVE C

SMA	Acres	SMA	Acres
*Ladron Mountain	62,460	*Walnut Canyon	1,730
*Pelona Mountain	78,320	The Box	320
*Agua Fria	10,770	Teypama	17
*Cerro Pomo	8,840	Newton Site	40
*Sawtooth	120	Playa Pueolos	320
*Soaptree	1,200	*Rio Salado	6,400
*Horse Mountain	7,720	*Town of Riley	600

Stallion	22,840	Mogollon Pueblo	640
Puertecito	10,040	Mockingbird	11,970
Fence Lake	32,840	Gap	
*Tinas	3,520	*San Lorenzo	4,800
Fort Craig	160	Canyon	
*Continental	7,680	*San Pedro	1,200
Divide National		*Iron Mine Ridge	800
Scenic Trail		*Taylor Canyon	320
Datil Well	640	*Harvey Plot	3
Campground		Zuni Salt	5,760
		Lake	

\*ACEC

6. Wild Horse Management: Implementation of this alternative would allow the wild horse herd to naturally increase to the full carrying capacity of the public lands in the Bordo Atravesado WHMA. This would result in approximately 2,148 AUMs being allocated for 179 horses. Livestock grazing in the herd area of the Bordo Atravesado Allotment No. 1254 would be eliminated.

The wild horse herd would be monitored and removed as needed to maintain the horse population at an average of 179 horses. Selective removal and introduction of outside breeding stock as stated in Alternative B would take place.

#### 7. Coal Leasing Suitability/Assessment:

Under this alternative, all high coal development areas would be carried forward, except for 1,340 acres that would be eliminated by application of multiple-use screens. All other multiple-use screens would be mitigated. This alternative would carry forward 26,460 acres for further leasing consideration.

#### Management Concerns

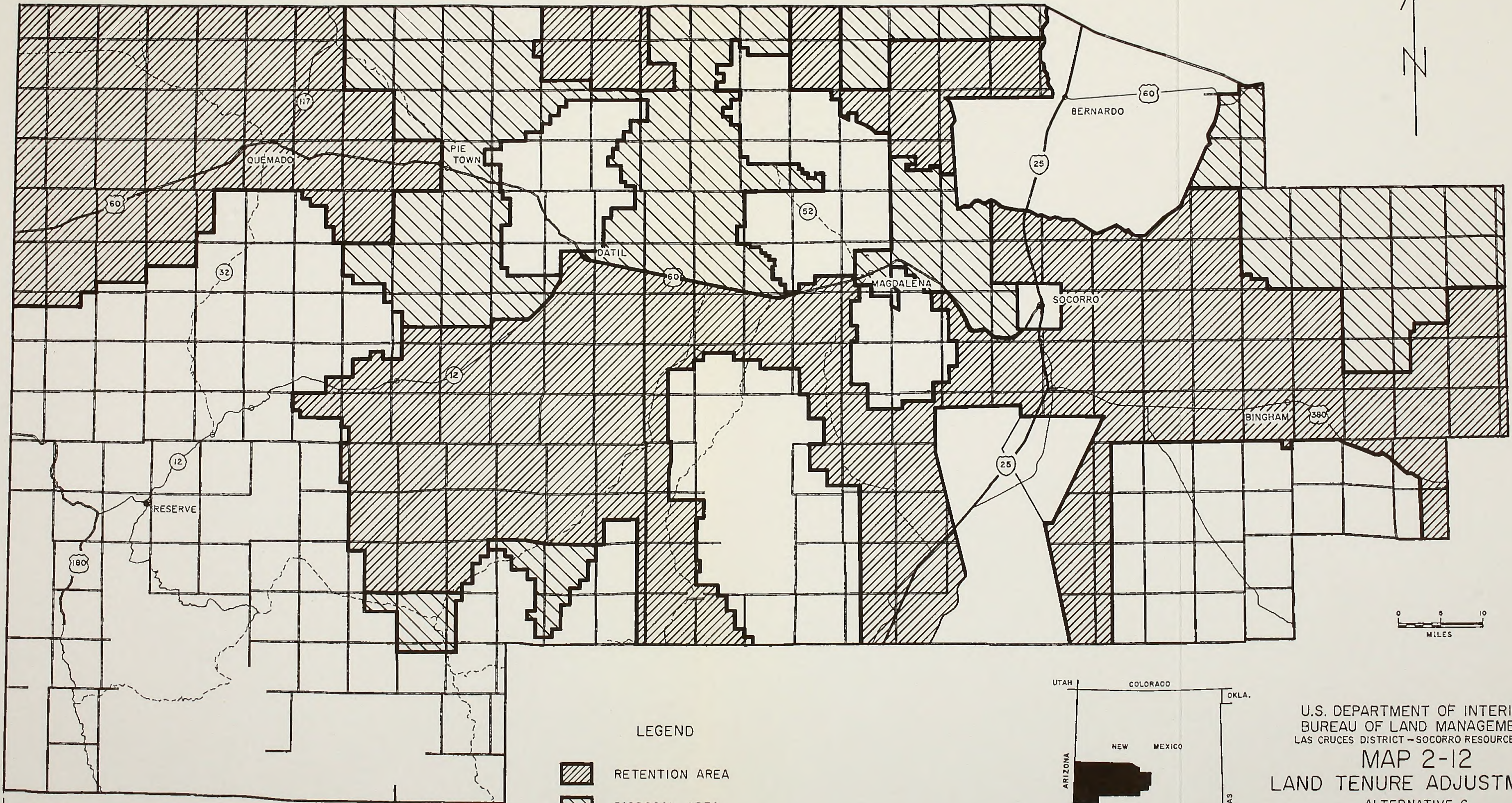
##### Fluid Mineral Leasing

Under this alternative the four proposed fluid leasing stipulations, SRA-1 through SRA-4, would be selectively applied to the SMAs and other areas outside the SMAs considered to have critical resource concerns, such as critical watershed erosion, high VRM classification (VRM I or II), riparian areas (springs), critical wildlife habitat, such as





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LEGEND

-  RETENTION AREA
-  DISPOSAL AREA



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-12**  
LAND TENURE ADJUSTMENT  
ALTERNATIVE C

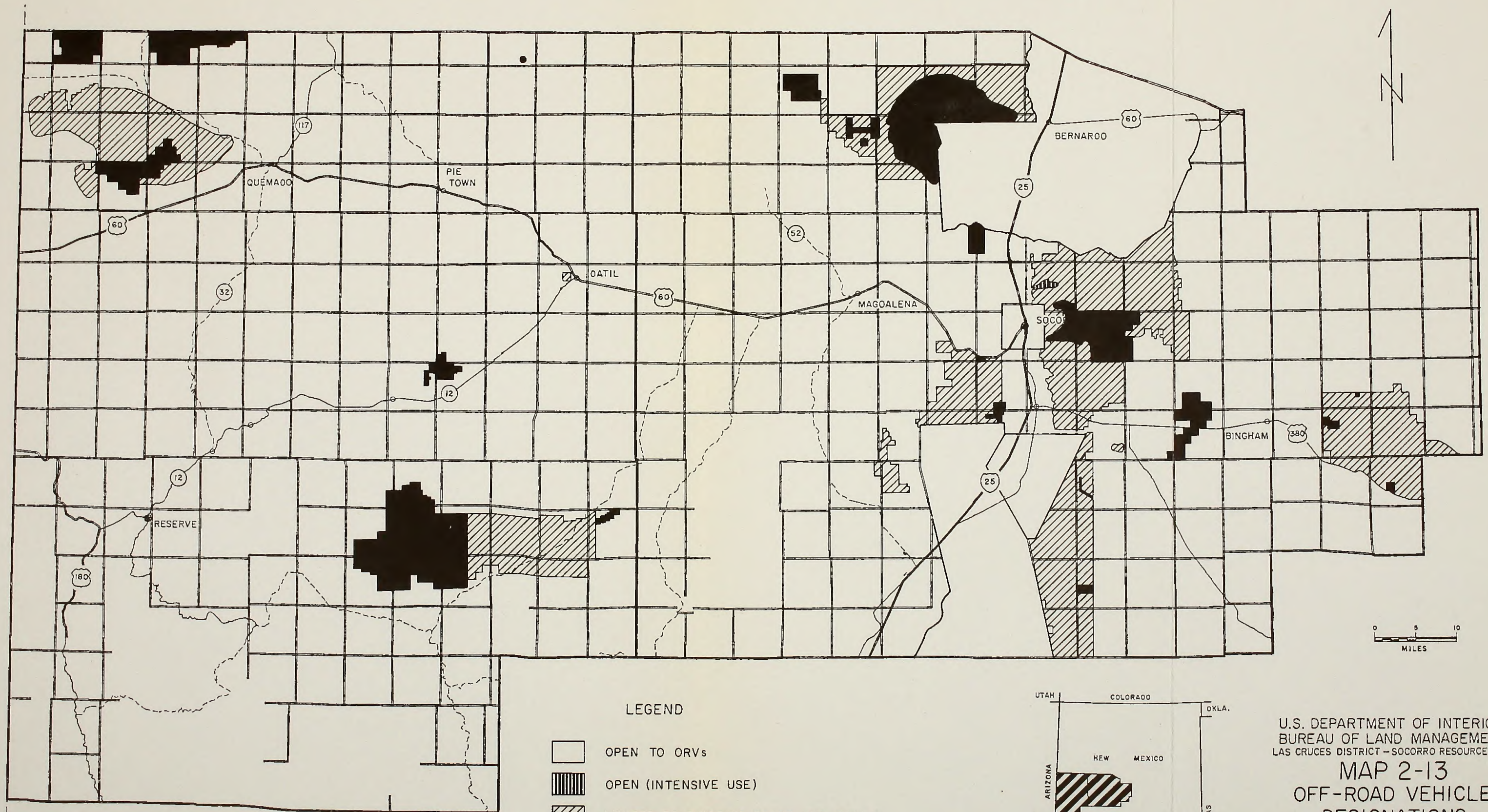






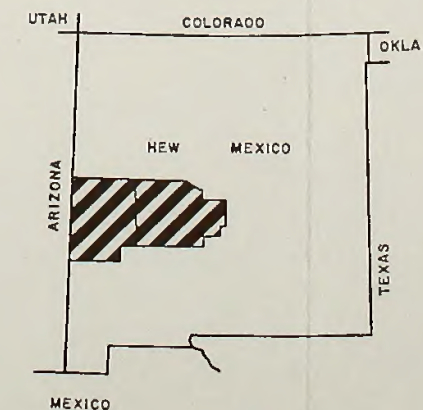
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LEGEND

- OPEN TO ORVs
- OPEN (INTENSIVE USE)
- LIMITED TO EXISTING ROADS AND TRAILS
- CLOSED TO ORVs



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-13**  
**OFF-ROAD VEHICLE**  
**DESIGNATIONS**  
ALTERNATIVE C







fawning or calving areas, raptor nesting areas (prairie falcons, etc.) and other resources of high concern for recreation and wildlife. In addition certain lands containing especially sensitive resources would be closed to fluid leasing (Map 2-14). This alternative is designed for maximum protection of resources other than minerals.

Table 2-9 shows number of acres of total BLM-administered mineral estate in the SRA affected by each of the stipulations under this alternative. Note that some areas would have more than one stipulation on them.

The amount of BLM-administered mineral estate that has fluid leasing stipulations on it for this alternative is 1,074,000 acres, or about 47 percent. In addition approximately 3 percent of the BLM-administered mineral estate would be closed to leasing. Although these prescriptions also total 50 percent of the entire mineral estate as in Alternative B, they tend to be more discretionary and restrictive to maximize conservation of other resources. For example, there are no areas where SRA-4, the least restrictive stipulation, is applied in this alternative. Another example would be the 2 percent to which SRA-1, one of the more discretionary and restrictive stipulations, has been applied under this alternative as compared to only .4 percent acres under Alternative B. Under this alternative approximately 19 percent of BLM-administered mineral estate would be subject to the "No Surface Occupancy" stipulation. The WSMR Extension Area stipulation (NM-5) in combination with any or all of the other stipulations covers approximately the same number of acres, under all alternatives.

#### Right-of-Way Exclusion and Avoidance Areas

Under this alternative, the three existing right-of-way corridor designations would be eliminated while approximately 398,792 acres of public land would be identified as being within right-of-way exclusion areas. All VRM Class I and Class II areas and all proposed SMAs, with the exception of the Divide Tin area, would be excluded from any future right-of-way development. Approximately

14,740 acres of public land would fall into areas of right-of-way avoidance (see Map 2-15). These avoidance areas would coincide with existing critical watershed areas which are not included within any of the proposed SMAs.

## ALTERNATIVE D

Alternative D attempts to resolve the planning issues while placing primary emphasis on making public land and resources available for production and development.

The production aspect of the minerals, grazing, ORV, forestry, and similar production-oriented programs are emphasized under this alternative. In addition, the problem of scattered land ownership would be resolved by disposing of unmanageable BLM tracts. The goal of this alternative is to change management direction in the SRA so that the seven issues are resolved in a manner that generally places highest priority on the production of resources and economic development from the public lands; management of various other resources would continue in areas not emphasized under this alternative.

**1. Land Ownership Adjustments:** The implementation of this alternative would result in the eventual disposal of 231,000 acres of public land located in various disposal blocks throughout the SRA. The acquisition of 40,280 acres of non-public lands would be pursued within SMAs as a high management priority. Map 2-16 depicts the retention and disposal areas for this alternative. This map and the existing land status map in the back pocket of this document should be used together to visualize the public land patterns in these areas. Table 2-5 displays disposal and specifically identified acquisition acreages by alternative. Public land totaling 1,289,610 acres located within large retention blocks would be maintained in public ownership under the administration of the BLM, yet unlimited exchange opportunities which serve the public interest may be entertained within these retention blocks to further consolidate public

and non-public land holdings. In all disposal actions exchanges would be considered the preferred method of ownership adjustment, with sales always being considered as the lowest priority. R&PP patent applications would continue to be processed on a case-by-case basis and may be allowed in retention areas if determined to be in the public's best interest.

As part of this proposal the BLM would retain two large blocks of public land, one just east of the Rio Grande Valley and the other in the extreme northwestern corner of the SRA. BLM would also retain management responsibilities for Ladrón Mountain, Pelona Mountain, Horse Mountain, portions of the public lands in the Plains of San Augustine and all public lands surrounding the Bosque del Apache and Pedro Armendaris Land Grant. The primary areas of disposal under this alternative would be the public lands in the vicinity of Chupadera Mesa, the Rio Grande Valley, the lowlands between the San Mateo and Magdalena Mountains, large portions of the Plains of San Augustine and all lands north of US Highway 60 from Socorro to Quemado excluding the Ladrón Mountain area.

The 40,280 acres of specifically identified non-public land to be acquired as part of this alternative would be in support of resource production-oriented SMAs. An unknown amount of non-public land located within BLM retention areas would be considered as potentially suitable for acquisition to enhance BLM resource-oriented programs as part of this alternative.

**2. Vegetative Uses:** This alternative would emphasize the production of forage for livestock consumption giving it priority over other competitive uses. This would be accomplished by implementing an intensive management program on all allotments in the Chupadera Mesa area. Rangeland improvements and vegetative land treatments proposed are shown in Appendix C, Table C-2.

The authorized grazing use of 28,008 AUMs would be increased to 29,020 AUMs through the implementation of rangeland improvements, grazing treatments, and vegetative land treatments (burning, mechanical, and chemical

treatment). Adequate forage would be reserved for wildlife. Approximately 330 AUMs should meet the present needs of wildlife.

Actions would be authorized to maintain the current satisfactory conditions on 105,000 acres of public land and improve 15,000 acres of public land in fair and poor ecological condition.

An intensive management program through the implementation of AMPs on eight allotments would be developed under this alternative. The two existing AMPs would be maintained or revised.

Forage increases as they become available, would be allocated to livestock first then wildlife and watershed.

New rangeland improvements would be designed and constructed to benefit livestock grazing, with other resources receiving secondary consideration.

Vegetative land treatments are proposed on public land for approximately 7,550 acres within the Chupadera Mesa area. An anticipated increase of 3,250 AUMs are expected. Target species include snakeweed - 3,500 acres, cholla - 1,210 acres, and creosotebush - 400 acres. Burning is proposed on 2,440 acres of sacaton spp.. Approximately 220,000 acres are proposed for treatment within the East Socorro ES area. Target species include creosotebush - 54,000 acres, snakeweed - 38,000 acres, mesquite - 7,600 acres, sand sagebrush - 23,600 acres, cholla - 16,000 acres, and pinon-juniper - 3,200 acres (80,000 acres for wildlife improvements, see Alternative B).

No treatments would occur in areas with rare, endemic, or T&E plant species habitat.

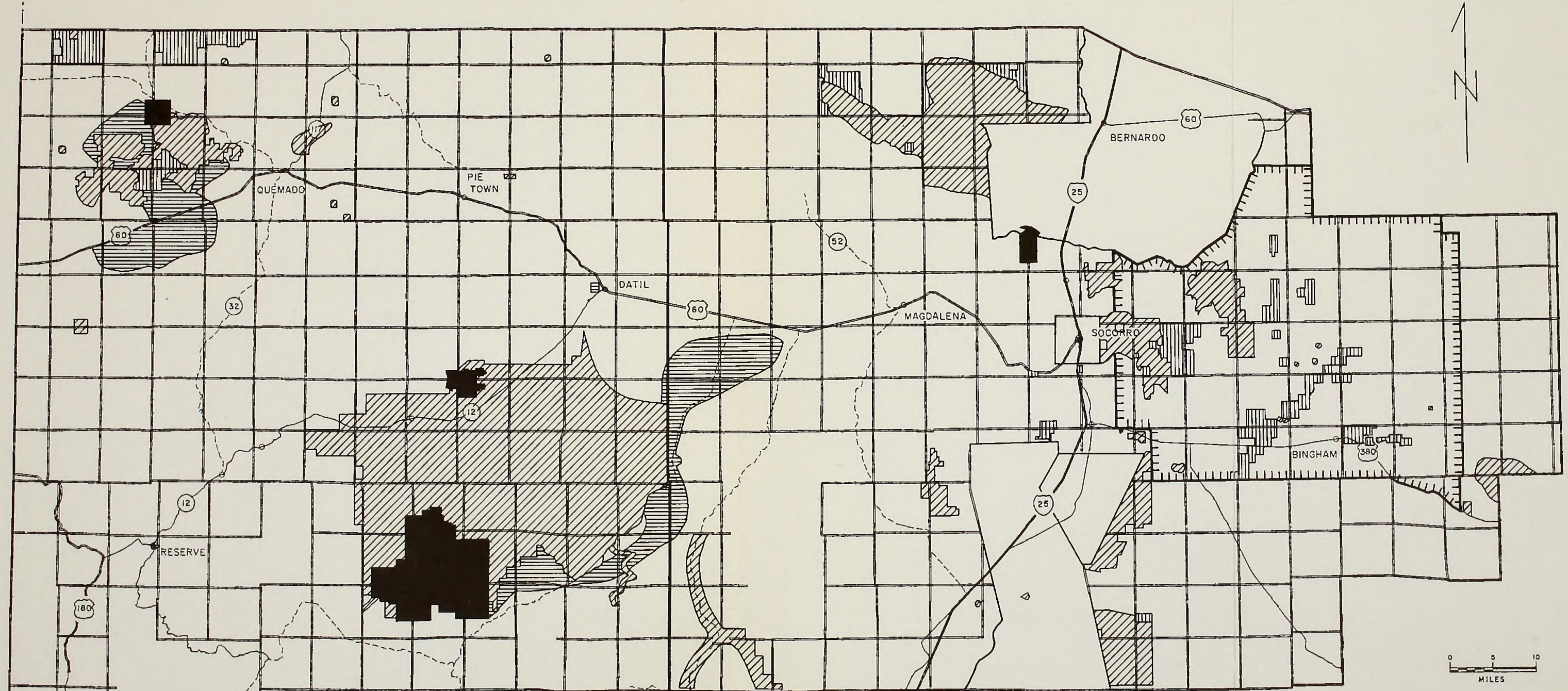
**3. Off-Road Vehicle Use:** Under this alternative the 1,520,610 acres of the SRA would be designated as open to motor vehicle use. Emergency ORV closures would be utilized as needed.

**4. Access:** The implementation of this alternative would emphasize accommodating









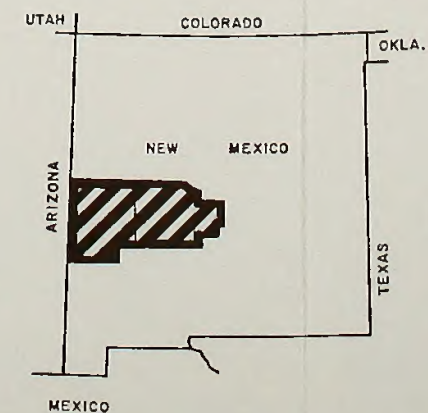
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LEGEND

-  STANDARD
-  MANAGEMENT DISCRETION - THROUGHOUT YEAR (SRA-1)
-  MANAGEMENT DISCRETION - SEASONAL (SRA-2)
-  NO SURFACE OCCUPANCY (SRA-3)
-  WHITE SANDS MISSILE RANGE EVACUATION AREA (NM-5)
-  CLOSED TO FLUID LEASING



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-14**  
**FLUID LEASING STIPULATIONS**  
ALTERNATIVE C

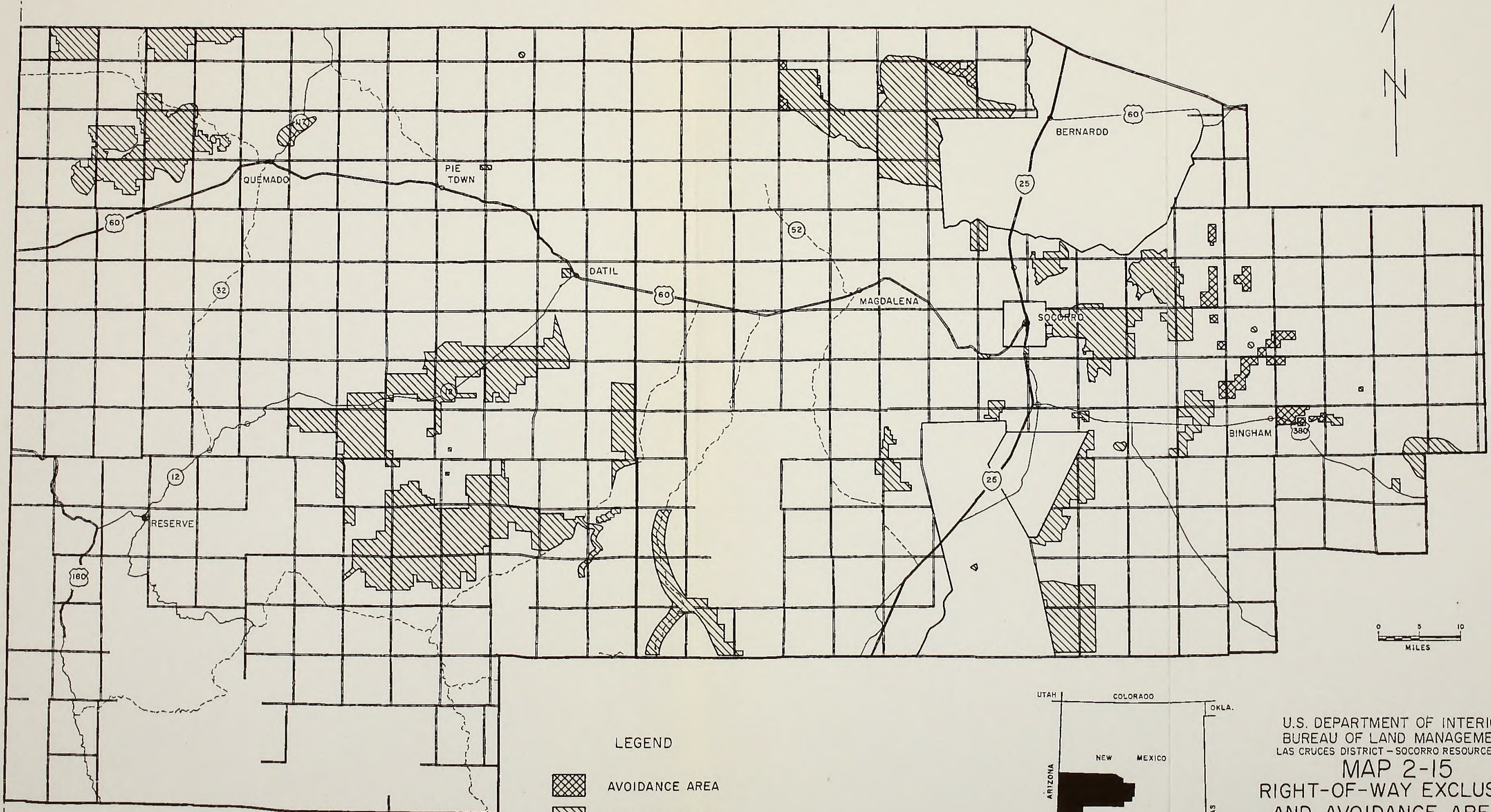








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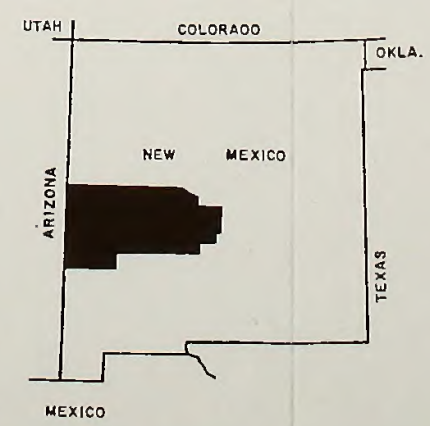
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LEGEND

 AVOIDANCE AREA

 EXCLUSION AREA



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-15**  
**RIGHT-OF-WAY EXCLUSION**  
**AND AVOIDANCE AREAS**  
ALTERNATIVE C

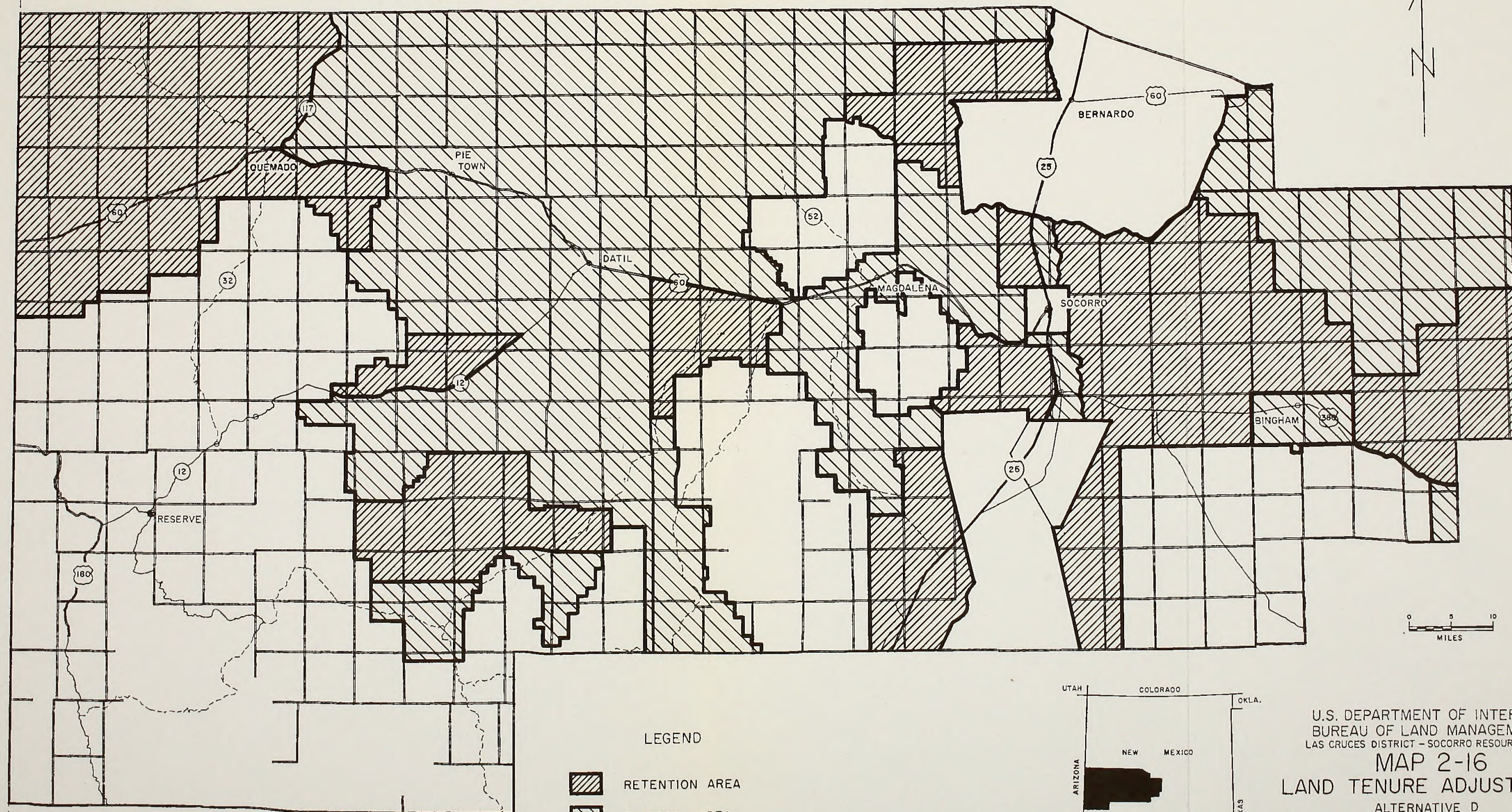








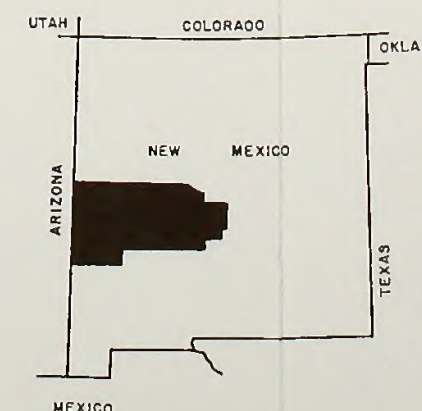
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LEGEND

-  RETENTION AREA
-  DISPOSAL AREA



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-16**  
**LAND TENURE ADJUSTMENT**  
ALTERNATIVE D







access needs for resource production-oriented programs. Acquiring legal access into presently inaccessible lands or into areas where only physical access exists would be a priority. The closure and rehabilitation of existing undesirable vehicle routes, however, would also be considered as important. The nine access tracts (see Appendix F, Map F-1) would be prioritized, with activity plans being developed in the future for each tract to further analyze access concerns within their boundaries and promote resource production-oriented programs. The access tracts are identified in priority order as follows:



5. Special Management Areas: Five SMAs totaling 66,467 acres are being identified under this alternative. Table 2-11 displays the names of the SMAs, while Appendix L provides a map, a detailed description, and a summary of the management goals and prescriptions for each area.

TABLE 2-11  
SPECIAL MANAGEMENT AREAS FOR ALTERNATIVE D

SMA	Acres	SMA	Acres
Divide Tin	62,130	Datil Well	640
*Tinajas	1,280	Campground	
Fort Craig	160	Teypama	10

\*ACEC

6. Wild Horse Management: All wild horses in the SRA would be removed and made available for adoption through the BLM Adopt-A-Horse Program. Available AUMs of forage would be reallocated.

7. Coal Leasing Suitability/Assessment

With this alternative, the entire high coal development potential area would be considered for leasing and the multiple-use screens would not be applied. This would result in a total of 27,640 acres (maximum amount of acres

feasible) being carried forward for further leasing consideration.

Management Concerns

Fluid Mineral Leasing

Under this alternative, the proposed fluid leasing stipulations would be applied only minimally to protect other resources, except where required to do so by law or regulations such as National Historic Sites, cultural resources, and T&E plants and animals, etc. The emphasis would be on production of fluid minerals.

Table 2-9 shows acreages affected by the proposed fluid leasing stipulation under this alternative. There is only one occurrence of overlapping stipulations, the WSMR Safety Evacuation Area (NM-5) and the no surface occupancy stipulation (SRA-3) under this alternative. This overlap involves approximately .3 percent of the total BLM-administered mineral estate. With this alternative, approximately 77 percent of the BLM-administered mineral estate would have no restrictions other than the standard lease provisions (Map 2-17).

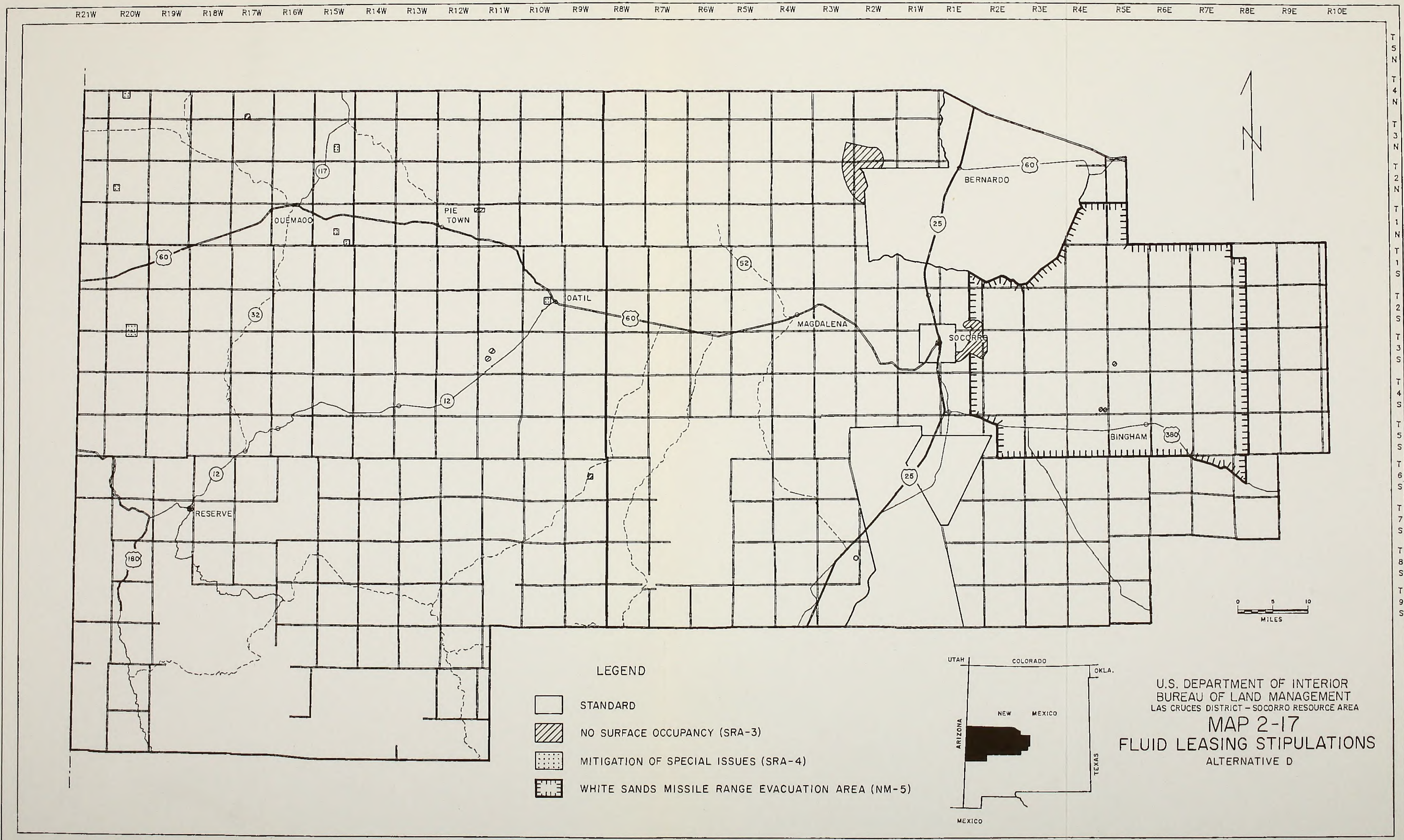
Thus, under this alternative only those areas identified by prior agreement or containing especially outstanding resources are restricted by fluid leasing stipulations. This amounts to only about 23 percent of the total BLM-administered mineral estate in the SRA.

Right-of-Way Exclusion and Avoidance Areas

Under this alternative the three existing right-of-way corridor designations would be eliminated. One hundred and twenty acres of public land would be excluded from future right-of-way development while approximately 14,920 acres of public land would be identified as right-of-way avoidance areas (see Map 2-18). The excluded area would coincide with the Sawtooth SMA which contains known T&E plant species and the two identified areas of right-of-way avoidance are synonymous with those areas depicting a VRM Class I rating.







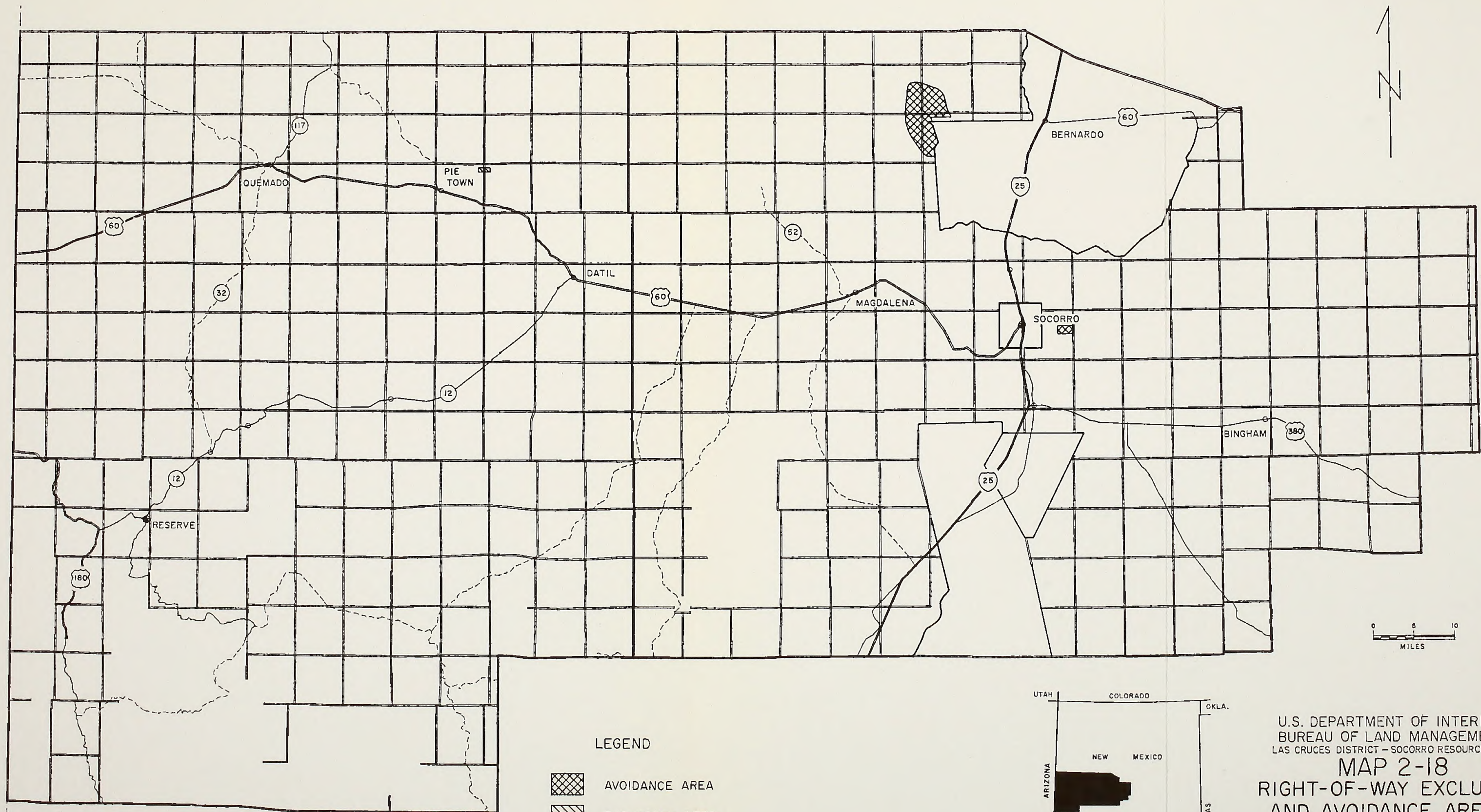








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LEGEND

-  AVOIDANCE AREA
-  EXCLUSION AREA

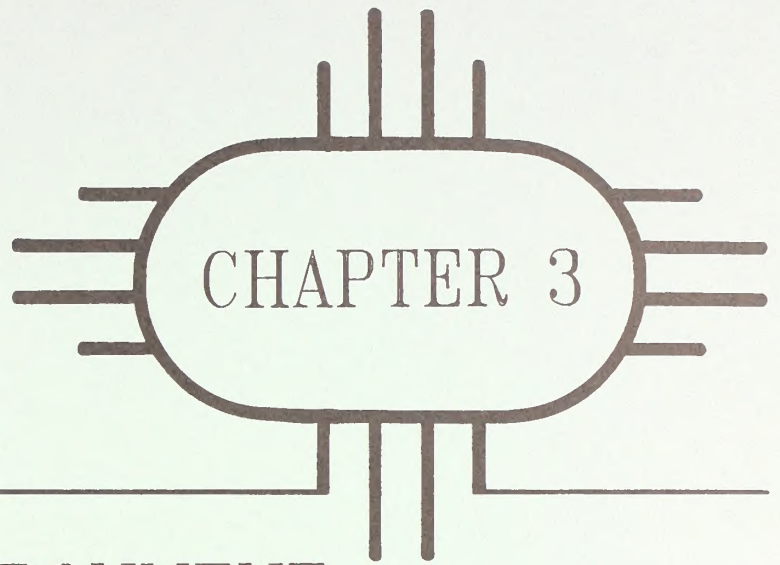


U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 2-18**  
**RIGHT-OF-WAY EXCLUSION**  
**AND AVOIDANCE AREAS**  
ALTERNATIVE D









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## AFFECTED ENVIRONMENT

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## INTRODUCTION

This chapter describes those physical, biological, social and economic characteristics of the Bureau of Land Management (BLM), Las Cruces District, Socorro Resource Area (SRA) which affect or are affected by the resolution of the seven issues and two management concerns identified in Chapter 2. Much of the information in this chapter summarizes more detailed material which is contained in the SRA Management Situation Analysis (MSA) and is available for review at the SRA office. The Existing Management Situation (EMS) and the Resource Area Profile (RAP) sections of the MSA are in-depth discussions of the environment in the SRA.

## TOPOGRAPHY

In general, the mountains west of the Rio Grande are massive, rising to heights of up to 10,895 feet (3,268 m) above mean sea level (AMSL) at Whitewater Baldy in the southwest portion of Catron County (Map 3-1). East of the Rio Grande the mountains are less massive, consisting of narrow linear ranges, with elevations up to 8,777 feet (2,633 m) AMSL. Large alluvial fans are present on the flanks of all mountains in the region. The San Augustine Plains is an ancient lake bed which averages about 5,900 feet (2,070 m) AMSL, ranging from 6,887 feet (2,066 m) AMSL in the southwestern portion of the basin to 6,950 feet (2,085 m) AMSL in the northeast. Average elevation AMSL of the Jornada del Muerto is about 5,283 feet (1,585 m). The Rio Grande Valley, where it passes through Socorro County, has an average elevation of about 4,667 feet (1,400 m) AMSL. The lowest elevation in the SRA is about 4,400 feet (1,320 m) AMSL, where the Rio Grande crosses the southern boundary of Socorro County. The rock and alluvium covered floors of the basins contain many local depressions, but on a regional scale the basin floors slope gently southwestward (Los Alamos National Laboratory Report 1985).

## CLIMATE

The SRA for the most part is semiarid, with the west half lying in the Southwestern

Mountain Climatic Zone and the east half lying mostly in the Central Valley Climatic Zone.

The average annual precipitation ranges from 8 inches in the Rio Grande Valley to 16 inches or more in the higher elevations. Precipitation consists of both rain and snow. More than 50 percent of the total annual precipitation falls during June through September. Most of the precipitation received comes in the form of local, short duration, high-intensity summer thunderstorms.

Temperatures vary mostly with elevation. Summer temperatures usually average around 90 degrees. Winter temperatures usually average around 34 degrees. The frost-free period is from mid-April to late October in the lower elevations and from mid-June to mid-September in the higher mountains.

Annual average wind speed is about 9 miles per hour, although spring winds are often much stronger, gusting to 40 miles per hour. Prevailing winds are generally from the west during the spring, the southeast and south in the summer, and from the north and northwest during the fall and winter seasons. Blowing dust can be a problem during dry periods, usually during the spring months when afternoon winds become quite gusty.

See the Climate Section of the MSA for detailed information on climate.

## MINERALS

The SRA is located within the Datil section of the Colorado Plateau Province and the Mexican Highlands portion of the Basin and Range Province (Hunt 1974). In places the Datil section of the Colorado Plateau is covered by a thick series of Tertiary volcanic rocks. These volcanics intertongue southward into the volcanic flows of the Mexican Highlands subprovince. The major topographic features in the Mexican Highlands region resulted from block faulting. The region is characterized by isolated fault block ranges separated by semiarid basins.

The SRA has a large variety of igneous, metamorphic, and sedimentary rocks representing all major geologic periods except





the Jurassic and possibly the Silurian. Outcrops of Precambrian rocks are limited to uplifted areas where the rocks have been exposed by erosion. The Precambrian rocks generally consist of quartzites, various gneisses, schists, and metavolcanic rocks that have been intruded by granite, leucogranite, and granodiorite plutons. Paleozoic rocks are exposed only in Socorro County and consist mainly of marine carbonates and sandstones. These older Paleozoic rocks are succeeded by younger Paleozoic redbeds, limestones, and gypsiferous sediments. Nonmarine Triassic strata are present mainly in the northern and northwestern portions of the SRA and the northern portion of the Jornada del Muerto. No Jurassic rocks are known to crop out in the SRA. Triassic rocks are unconformably overlain by Cretaceous sandstones and shales in east-central and northwest Socorro County and northwestern Catron County. During the mid-Tertiary, extensive volcanism and local igneous intrusive activity occurred in southwestern New Mexico. Miocene to Pliocene valley fill sediments were deposited in topographic and structural basins in the SRA. These rocks are in turn overlain by Pleistocene terrace gravels, pediment gravels, and bolson deposits. Recent basalt flows, known as malpais, cover limited areas within the SRA.

Minerals management in the SRA involves a varied assemblage of mineral resources. Existing activities as of November 1986 include oil and gas exploration, open-pit coal mining, development and extraction of sand, gravel, decorative stone (flagstone) and riprap material, perlite mining, and some precious metals production. Additionally, an area in the vicinity of Socorro Peak has been designated as a Known Geothermal Resource Area (KGRA).

The mineral potential classifications used in this chapter conform to BLM 3031 Manual definitions of "low", "moderate", and "high" categories.

#### LEASABLE MINERALS

##### Coal

Known coal resources within the SRA are limited to late Cretaceous sedimentary rocks.

The majority of the coal resources are within the northwestern and north-central portions of the SRA and lie within the Salt Lake and Datil Mountain Coal fields (Map 3-2). Smaller tonnages of known coal resources exist in three small fields east of the Rio Grande. These lesser fields are the Carthage, Jornada del Muerto, and La Joya coal fields. (The name La Joya is used in this document for the small unnamed coal field north-northeast of Socorro.)

Historically each of the above coal fields have had at least some minor level of exploration and development. Substantial production occurred in both the Riley (southeastern most portion of the Datil field) and the Carthage areas. Coals of excellent quality were mined intermittently in the Carthage area from 1861 until the 1950's for both coking and heating purposes. Other fields were sporadically used for domestic heating. Current coal activity in the SRA includes two exploration permits on Federal lands and an open-pit coal mine developed by Salt River Project (SRP) on State land within the Salt Lake coal field. Another exploration permit is expected to be applied for by SRP late in 1987 or early 1988. Future development of coal resources within the SRA appears to be primarily focused on the Salt Lake and Datil Mountain coal fields. Although some unfaulted, potentially economic coal resources may exist within the southern portion of the Jornada del Muerto and Carthage coal fields, the larger coal fields provide more attractive exploration targets for large tonnage operations. The La Joya field is currently restricted from development by the private landowners.

The Salt Lake coal field lies within the northwestern part of Catron County and extends into southern Cibola County. The area in Cibola County is being assessed as part of this resource management plan (RMP)/EIS due to past interoffice agreement. Exploration by the New Mexico Bureau of Mines and Mineral Resources (NMBMMR) under contract from the U.S. Geological Survey (USGS) delineated areas with potentially economic coal reserves during the early 1980's. The quality of coal identified during this exploration program is comparable to the Fruitland formation of the

San Juan Basin. A comparative analysis of the Salt Lake and Fruitland coal appear on Table 3-1. More recently, two exploration licenses were issued on Federal land within the immediate proximity of several recently issued State coal leases held by SRP of Phoenix, Arizona.

TABLE 3-1  
Comparison of Salt Lake Coals to  
Fruitland Coals 1/

	Salt Lake Average 2/	Fruitland Average 3/
Moisture	4.9	9.7
Volatile Matter	35.1	30.7
Fixed Carbon	40.7	36.1
Ash	21.8	24.7
Carbon	55.8	48.1
Hydrogen	4.4	4.9
Nitrogen	1.1	0.9
Oxygen	11.7	22.8
Sulfur	0.8	0.8
British Thermal Unit	9,660	9,714

1/ All figures are expressed in percents  
except the British Thermal Unit

2/ Based on 14 samples

3/ Based on 47 samples

As a result of exploration effects since 1980, SRP has developed a short-term open-pit coal mine for the purpose of a test burn to determine how well the coal would serve as fuel for the intended power plants. This is the "Fence Lake No. 1" mine on State leases in the vicinity of Fence Lake in northwestern Catron County. A total of 107,000 tons of coal have been extracted from the "Fence Lake No. 1" mine to date. SRP is also planning to develop a transportation system for hauling coal to two coal-fired electric power generating plants in northeastern Arizona. SRP has planned an additional drag-line operation on State, Federal, and private lands. This tentative mine operation schedules 1.5 million tons per year for 35 years, beginning in the 1990s.

The Datil coal field which extends into the north-central portion of the SRA has also received some recent attention. Several open file reports on recent exploration of the area have been completed by the NMBMMR and are available at its office in Socorro, New Mexico. The general conclusion of these reports is that the identified coal is sufficient to enable local, small scale mining for domestic use; but under present economic and transportation conditions it is not sufficient for a major mining operation.

#### Oil and Gas

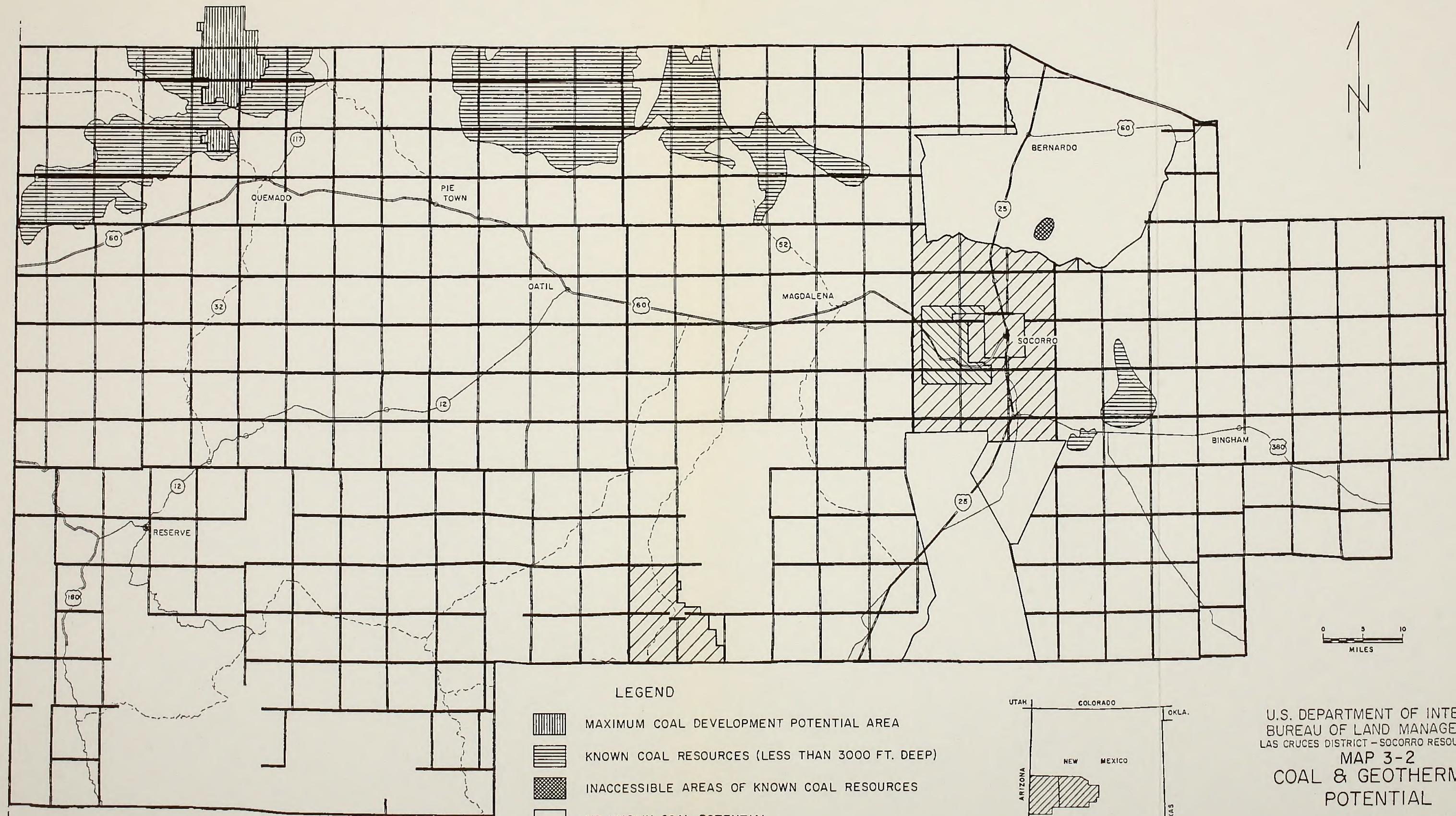
Although there has been no oil and gas production within the SRA and no known geologic structures for oil and gas have been classified, there exists relatively untested favorable reservoir and source rock. Favorable reservoir and source rocks are generally limited to Cretaceous, Permian, and Pennsylvanian sedimentary formations. The structural features that have been of primary interest in the past are the Albuquerque Basin, the Acoma Basin, the Jornada del Muerto Basin and the Chupadera Mesa area (Map 3-3). More recently, the northern portion of the Datil-Mogollon volcanic field has been recognized as a promising exploration area. Activities in other areas of the United States have indicated that surficial volcanic deposits do not necessarily dictate destruction of hydrocarbons in deeply buried favorable reservoir rocks. Recent geophysical studies indicate that a fairly intact section of Cretaceous, Permian, and Pennsylvanian sedimentary rocks have been recently identified under the surficial volcanic deposits in the Datil volcanic field.

Past scattered oil and gas wildcat drilling has only produced a few shows of oil and gas; but work by Shell Western Exploration and Production Incorporated (SWEPI) in the last three to four years has considerably increased oil and gas exploration interest in the area, particularly in Catron County. SWEPI has a development contract with the BLM committing itself and its associates (Elf Aquitaine, Inc. and SOHIO Petroleum Company) to conduct geologic and geophysical studies of the entire development area and to drill three wildcat









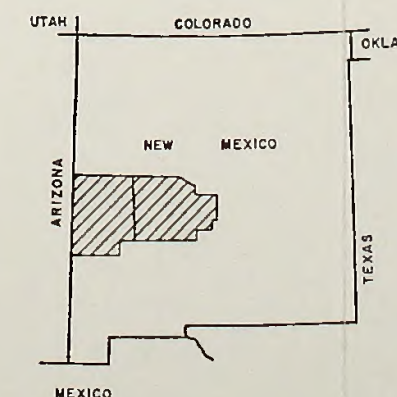
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LEGEND

-  MAXIMUM COAL DEVELOPMENT POTENTIAL AREA
-  KNOWN COAL RESOURCES (LESS THAN 3000 FT. DEEP)
-  INACCESSIBLE AREAS OF KNOWN COAL RESOURCES
-  NO KNOWN COAL POTENTIAL
-  KNOWN GEOTHERMAL RESOURCE AREA
-  PROSPECTIVELY VALUABLE GEOTHERMAL RESOURCES



U.S. DEPARTMENT OF INTERIOR  
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LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
MAP 3-2  
COAL & GEOTHERMAL  
POTENTIAL

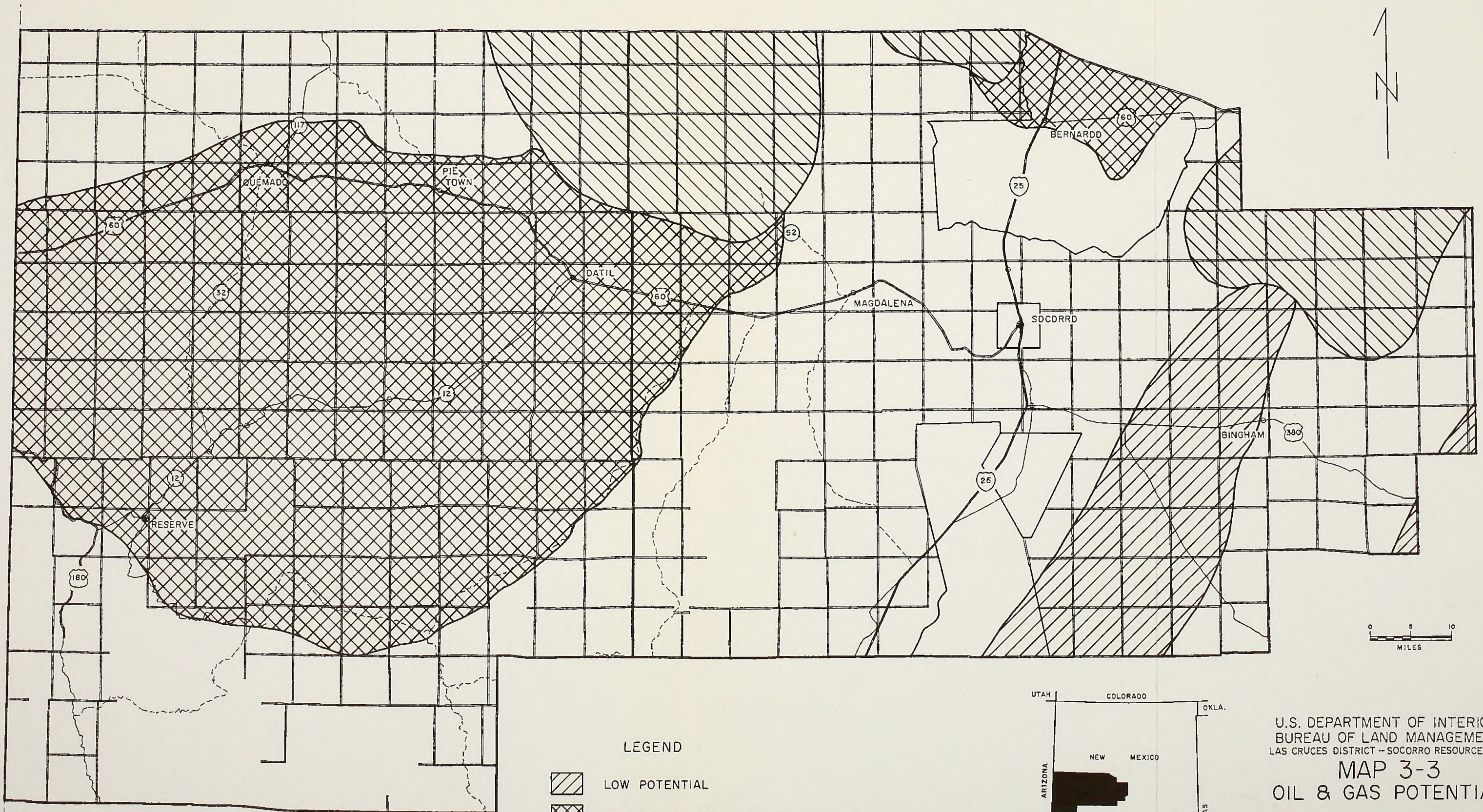









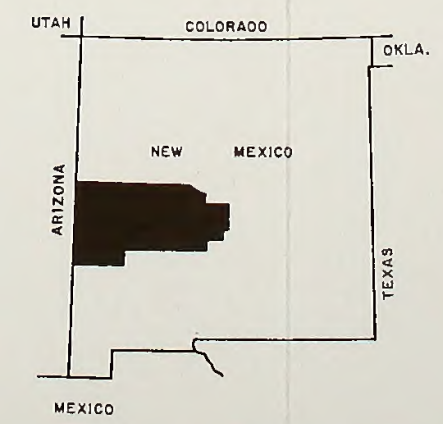
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LEGEND

-  LOW POTENTIAL
-  LOW TO MODERATE POTENTIAL
-  MODERATE POTENTIAL



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 3-3**  
**OIL & GAS POTENTIAL**







wells before December 31, 1989. If the agreement continues in effect beyond 1989, in accordance with its terms, the companies will also commit to drill five additional exploratory test wells before 1995. This development contract permits the companies to acquire in aggregate, leases covering a maximum of 900,000 acres of public lands within the development area (there are currently about 956,411 acres of public land under oil and gas leases in the SRA).

To date SWEPI has completed approximately 800 linear miles of seismic exploration surveys within the development contract area. The intensity of future exploration and possible production in the SRA will significantly depend on the results of SWEPI's efforts in exploring this, as yet untested, section of basin rocks.

#### Geothermal

Geothermal resources of primary interest within the SRA are associated with graben structures within the Datil-Mogollon volcanic field and the Rio Grande rift (Map 3-2). Grabens within areas of relatively recent volcanic or tectonic activity often have geothermal systems since a source of heat, as well as water, is present. Both the Rio Grande Rift and the Datil-Mogollon volcanic field are relatively recent features in a geologic sense. Although geotectonic activity in the Datil-Mogollon field has apparently subsided, the Rio Grande rift continues to be active.

The Gila Hot Springs graben and the Mangas Trench host active hot springs which range from 30°C to 65°C. These areas are on private and U.S. Forest Service (FS) managed lands in southwestern and south-central Catron County. The northern portion of the Mangas Trench is classified as a competitive leasing area and is named the Lower Frisco Hot Springs KGRA. The Gila Hot Springs and Mangas Trench areas are within FS lands and private lands within the SRA and are not directly affected by this plan.

The Rio Grande rift area does include significant acreages of BLM-administered lands

and may potentially be affected by the proposed plan. The Rio Grande rift has had only minor commercial exploration, but is considered to have the highest short-term potential for geothermal development due to the population density along the Rio Grande. Recent geophysical studies have identified a large sill-like magma body approximately 20 km beneath the Rio Grande Valley near the town of Socorro. Recent studies have also identified dike-like magma bodies which have risen to within 5 km of the surface along faults.

These dikes intercept the sill-like body. Due to the presence of these magma bodies and elevated spring water temperatures, a competitive leasing area, named the Socorro Peak KGRA has been classified along the western margin of the Socorro Land Grant. Although competitive leases exist, little exploration has occurred or has been proposed. It is expected that these geothermal systems will become more attractive as petroleum resources are depleted, technology improves, and relatively pollution-free energy sources are needed.

#### Solid Leasables Other Than Coal

There are no potential solid leasables other than coal which are currently attracting commercial interest. Large sections of salt are apparent within the Permian formations near the Carrizozo Lava Flow and Fence Lake. Potash could possibly be associated with these evaporate deposits. Solid leasables other than coal are primarily associated with acquired lands within FS boundaries where the 1872 Mining Law does not apply and "locatable type" minerals are leased.

#### LOCATABLES

The variety of rock types and structural features within the SRA host a cadre of metallic and non-metallic locatable minerals. Map 3-4 and Table 3-2 illustrate areas identified as known mineral resource areas by the USGS and provide some salient information about each of these areas. These areas are generally considered to have high to moderate mineral potential by the BLM.

As indicated by Table 3-2, the majority of the known mineral resource areas are volcanic-related epithermal deposits and are associated with Tertiary Cauldrons. These epithermal deposits occur primarily within the Datil-Mogollon volcanic field. The eastern portion of Socorro County hosts lead/zinc replacement deposits in paleozoic limestones.

Iron skarns, beryllium-iron-tungsten skarns and rhyolite hosted tin deposits (with associated placers) also occur within the Datil-Mogollon volcanic field but, as with most precious metal and manganese systems, are related to relatively younger more siliceous volcanic rocks. Most base metal deposits tend to be associated with older calc-alkaline volcanic rocks. Substantial iron skarns also occur in the extreme eastern portion of Socorro County, within the Jones Camp District.

Sediment-related hydrothermal barite-fluorite-galena deposits are primarily associated with normal faulting that runs north-south within the Rio Grande Rift structure. Faulting within the rift area has also exposed sedimentary copper, uranium, and silver deposits within the Bursum and Abo Formation through the east-central portions of Socorro County.

In addition to occurring within redbed copper deposits, uranium also occurs in Tertiary basins and veins. Sedimentary uranium occurs in upper Cretaceous and lower Tertiary sediments in the area north of Datil and Pie Town. Secondary uranium also occurs in reducing fault zone environments along the Rio Grande Rift area, especially at the front of the Ladron Mountains. Carbonatite veins in the Lemitar Mountains host uranium and may indicate potential for rare earth elements. Carbonatites are typically associated with rift structures.

Precambrian veins and replacement base metal deposits have also been identified in uplifted terrain within the Rio Grande Rift area.

Gypsum and limestone, suitable for industrial purposes, occur across broad areas of Paleozoic sediments within the eastern and north-central portion of the SRA. Economic

perlite resources occur within the Socorro Peak area and may also occur in association with the volcanics of the western two-thirds of the SRA.

Although mineral production within the SRA may be close to a historical low, the area has made a significant contribution to our Nation's past mineral supply. Mineral exploration was the primary motivation behind the growth of the east-central and southwest portions of the SRA during the late 1800's. Barite, copper, fluorite, gold, iron, lead, manganese, perlite, silver, and zinc have been the primary locatable commodities produced. Other locatable commodities which have been exploited to a lesser degree include beryllium, gypsum, limestone, mineral specimens, silica flux, tellurium, tin, tungsten, and vanadium.

Currently the only locatable minerals in production within the SRA are gold, mineral specimens, perlite, and silver. Precious metals are being recovered from old tailings and mine run ore within the Mogollon area. Perlite is currently being mined immediately west of Socorro on the southern margin of the Socorro Peak District. Mineral specimens are primarily collected, both casually and commercially, from several of the idle mining districts.

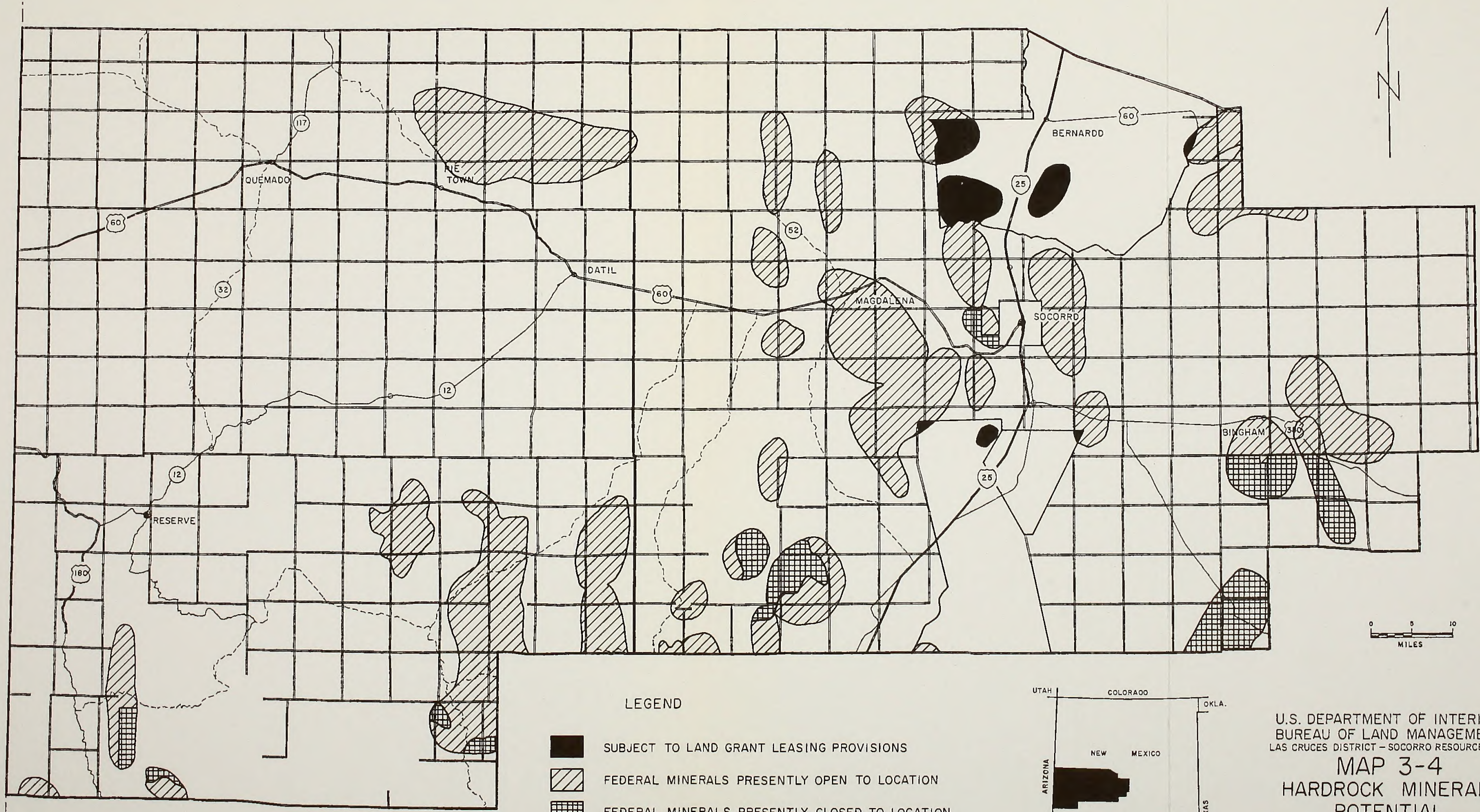
#### SALEABLES

A wide variety of saleable minerals are available within the SRA (Map 3-5). Sand and gravel occur along the Rio Grande and other primary drainages of the SRA. The highest quality sand and gravel are associated with the older, down channel deposits of the Rio Grande. The side channel deposits of the Rio Grande are being utilized, but do not provide quality concrete aggregate. Quality sand and gravel deposits are scarce in the western portion of the SRA. Mine waste from abandoned manganese mines in the Socorro area is also a source of ballast, concrete aggregate, and riprap. Cinders occur within the easternmost and westernmost portions of the SRA within relatively recent volcanic fields. Although there has been some exploration of the easternmost cinder cones, substantial volumes of excellent quality cinders within the



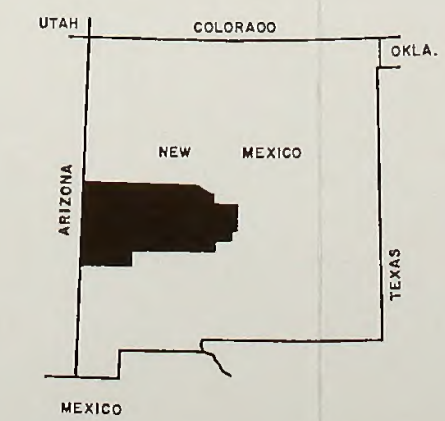
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LEGEND

- SUBJECT TO LAND GRANT LEASING PROVISIONS
- FEDERAL MINERALS PRESENTLY OPEN TO LOCATION
- FEDERAL MINERALS PRESENTLY CLOSED TO LOCATION



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 3-4**  
**HARDROCK MINERALS**  
**POTENTIAL**







TABLE 3-2  
Known Locatable Mineral Resource Areas

County	No.	KRMA*	Location	Commodities**	Description of Deposit and Host Rock	Deposit Type***
Catron	1	Chloride	Tps. 8,9,10,11,12 S., R. 9 W.	Ag, Au, Cu, Pb, V	Fissure veins in Tertiary andesite	B
Catron	2	Datil/ Pie Town	Tps. 1,2,3, N., R. 8-13 W.	U, Th	Unconformity related sedimentary deposits at the Cretaceous/Tertiary contact	I
Catron	3	Mogollon	Tps. 9,10,11,12 S., R. 19 W.	Ag, Au, Cu, fluorite, Pb, U	Deposits along faults in Tertiary volcanics, including andesite, rhyolite, and quartz latite.	B, J
Catron	4	San Francisco Prospects	Tps. 12 S., R. 20, 21 W.	Ag, Au	Quartz veins in rhyolite intrusives.	B
Catron	5	Sullivans Hole	Tps. 7,8, S., Rs. 9,10 W.	Ag	Fracture-filling veins and disseminated deposits in Tertiary volcanics.	B
Catron	6	Taylor Creek	Tps. 6,7,8,9,10,11 S., Rs. 11, 12, 13, 14 W.	Sn	Veinlets in altered Tertiary rhyolite; placer deposits in gravels.	K
Catron	7	Wilcox	T. 12 S., R. 18 W.	Au, Bi, fluorite, Te	Veins along faults in Tertiary andesite.	B
Socorro	8	Abbey Spring	Tps. 1,2 N., R. 4 W.	Ag, Cu, Pb, Zn	Quaternary volcanic rocks, Tertiary sedimentary rocks, Cretaceous Mancos Shale, and Triassic sedimentary rocks.	B
Socorro	9	Carthage	Tps. 4,5, S., R. 2 E.	Cu, Pb	Cavity fillings in Magdalena Limestone, along fault zone.	C
Socorro	10	Cat Mountain	T. 3 S., Rs. 5,6 W.	Ag, Au	Veins in Tertiary andesite and rhyolite.	B
Socorro	11	Cuchillo Negro	Tps. 9,10,11,12 S., Rs. 6,7 W.	Ag, fluorite, Fe, Sn, U	Veins in volcanic flows.	B, J

TABLE 3-2 (continued)  
Known Locatable Mineral Resource Areas

County No.	KRMA*	Location	Commodities**	Description of Deposit and Host Rock	Deposit Type***
Socorro 12	Chupadera	Tps. 2,3,4, S., Rs. 1, 2 E.	Barite, Cu, Fluorite, Pb, U	Deposits in sandstone member of Pennsylvanian Magdalena Formation, and in Yeso, Glorieta, and San Andres Formations.	C, D, I, J
Socorro 13	Chupadera Mountains	T. 5 S., R. 1 W.	Au, Ag, Cu, Pb, Zn	Fracture fillings in Precambrian schists.	A
Socorro 14	Council Rock	Tps. 1,2, S., Rs. 5, 6 W.	Ag, Fe, Pb	Veins in Tertiary (?) rhyolite porphyry, and quartz latite.	B
Socorro 15	Estey	Tps. 5,6,7 S., Rs. 6, 7 E.	Cu	Stratabound deposits in Permian Abo Formation "red-beds"; also in cross fractures and joints.	D
Socorro 16	Fra Cristobal	Tps. 10,11,12, S., Rs. 2,3 W.	Au, Cu, Mn, Pb, Zn	Deposits mainly in Precambrian rocks; also in Pennsylvanian, Permian, and Cretaceous rocks.	C
Socorro 17	Hansonburg	Tps. 5,6, S., Rs. 5, 6 E.	Barite, Cu, Fluorite, Pb	Deposits along faults; and open-space fillings in fissures and fault breccia cavities in Pennsylvanian Magdalena Limestone.	C
Socorro 18	Iron Mountain No. 2	Tps. 9,10, S., R. 8 W.	Be, Fluorite, Fe, U, W	Deposits in Pennsylvanian Magdalena Limestone, associated with underlying Tertiary monzonitic, granitic, and rhyolitic intrusives.	F, G
Socorro 19	Jones	Tps. 4,5, S., Rs. 6, 7 E.	Fe	Contact-metamorphic deposits in Permian Yeso, Glorieta, and San Andres Formations, adjacent to monzonite dike.	F



TABLE 3-2 (continued)  
Known Locatable Mineral Resource Areas

County No.	KRMA*	Location	Commodities**	Description of Deposit and Host Rock	Deposit Type***
Socorro 20	Joyita Hills	T. 1 N., R. 1 E.	Barite, fluorite, Pb	Fissure veins in volcanic rocks and in limestone and quartzite of Magdalena Group, near contact with Precambrian granite.	C
Socorro 21	Ladron	Tps. 2,3, N., Rs. 1,2,3 W.	Barite, Cu, fluorite, Mn, Pb, U, Zn	Deposits in Precambrian granite near rhyolite, andesite, and basalt dikes.	A, C, J
Socorro 22	Lemitar Mountains	Tps. 1,2, S., Rs. 1, 2 W.	Barite, Cu, Pb, U, Zn	Fissure fillings and pockets along contacts of Precambrian granite with Precambrian schist and mafic dikes.	C, H
Socorro 23	Luis Lopez Manganese	T. 4 S., R. 1 W.	Mn	Fault or breccia zones in massive Tertiary rhyolite.	B
Socorro 24	Magdalena****	Tps. 2, 3, 4, 5, 6 S., Rs. 2,3,4 W.	Ag, Au, barite, Cu, Mn, Pb, V, W, Zn, perlite	Replacement deposits in limestone and veins in rhyolites, andesites and quartz latites.	B, E
Socorro 25	Mockingbird Gap	Tps. 8,9,10 S., Rs. 4, 5 E.	Barite, Cu, fluorite, Pb, Zn	Fault fissures in Precambrian and Paleozoic rocks.	C
Socorro 26	Ojo Caliente No. 2	Tps. 8,9, S., Rs. 7, 8 W.	Ag, Cu, Pb, Zn	Veins in altered andesite.	B
Socorro 27	Rayo	Tps. 1,2, N., Rs. 4, 5, 6 E.	Cu	"Red-bed" deposits in loosely cemented Abo Sandstone.	D
Socorro 28	Red Hill	Tps. 7,8 S., Rs. 6,7 W.	Au and base metals	Deposits in latite and rhyolite volcanics.	B
Socorro 29	Rosedale	Tps. 5,6, S., Rs. 5,6 W.	Ag, Au	Veins in brecciated and sheared zone in rhyolite porphyry.	B

TABLE 3-2 (continued)  
Known Locatable Mineral Resource Areas

County No.	KMRA*	Location	Commodities**	Description of Deposit and Host Rock	Deposit Type***
Socorro 30	San Jose	Tps. 7,8,9 S., Rs. 4, 5,6 W.	Ag, Au	Veins and stringers in volcanic rocks, mostly in a thick deposit of rhyolite.	B
Socorro 31	San Lorenzo	T. 1 N., Rs. 1,2 W.	Cu, Mn, U	Fault zone between andesite and basalt.	B
Socorro 32	San Mateo Mountains	T. 9 S., R. 6 W.	Ag, Au, Cu, Pb, U	Veins in Tertiary volcanic rocks.	B
Socorro 33	Scholle	Tps. 2,3,4, N., Rs. 4, 5 E.	Ag, Cu, U	"Red-bed" type deposits in Abo Sandstone.	D, I
Socorro 34	Socorro Peak	T. 3 S., R. 1 W.	Ag, barite, Pb, perlite	Deposits in Tertiary volcanic rocks.	B
Socorro 35	Spring Hill (Amy)	Tps. 1,2,3, N., Rs. 5,6 W.	Barite, Cu, Pb, U	Quaternary part of Santa Fe Group, Tertiary sedimentary rocks, Cretaceous Mesaverde Group, and intrusives of various ages.	B

\* KMRA: Known Mineral Resource Area.

\*\* Ag - silver; Au -gold; Cu - copper; Fe - iron; Mn - manganese; Pb - lead; Sn - Tin; Th -thorium; u - uranium; V - vanadium; w - Tungsten; Zn - zinc

\*\*\* Deposit Types: A = Precambrian vein and replacement; B = Volcanic-Epithermal; C = Sedimentary related-hydrothermal barite, fluorite, and galena; D = Sedimentary copper; E = Carbonate hosted lead/zinc replacements; F = Iron Skarns; G = Beryllium-tungsten-iron skarns; H = Carbonatite; I = Sedimentary uranium; J = Vein type uranium; K = Rhyolite hosted tin w/associated placers

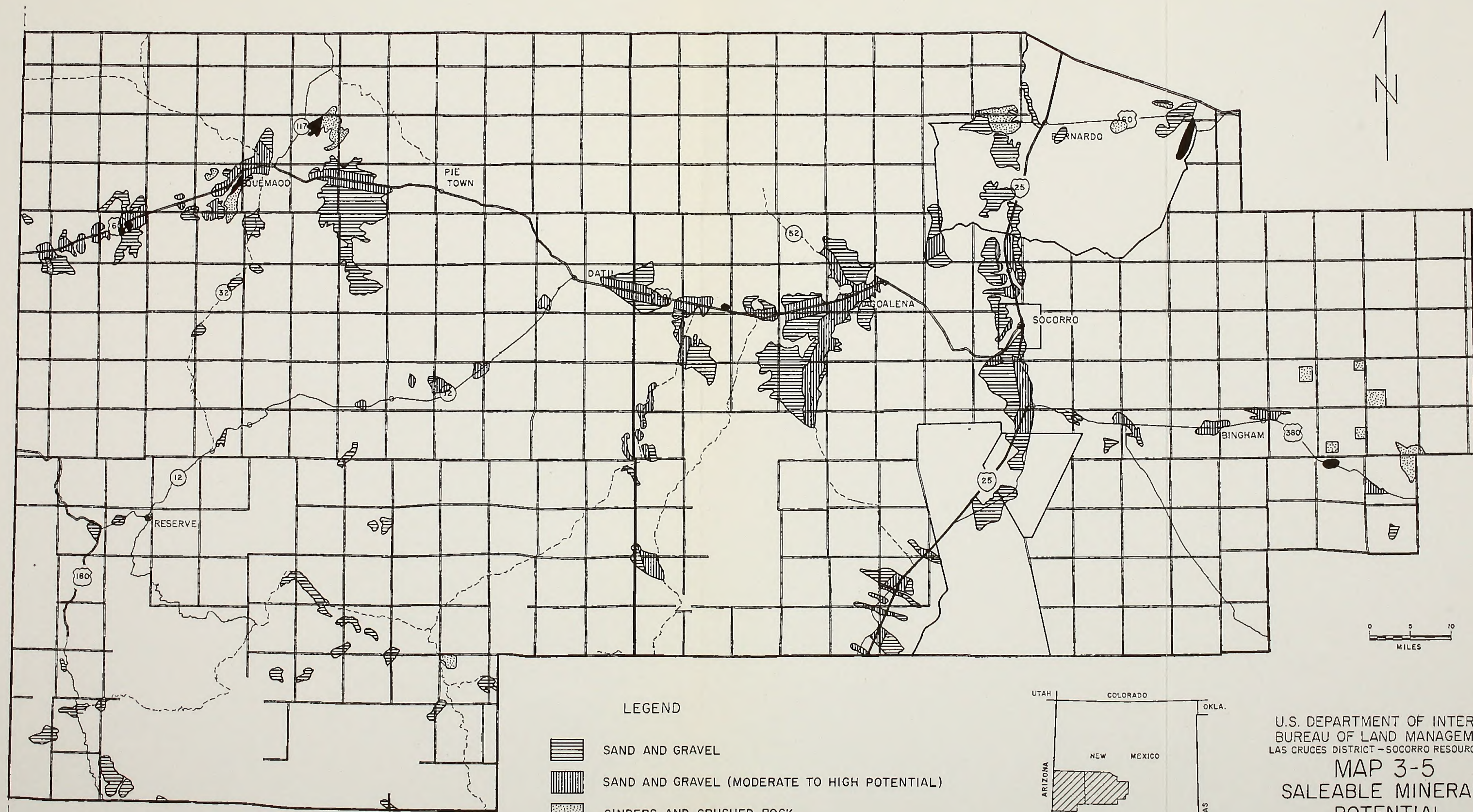
\*\*\*\* Includes North Magdalena, Water Canyon, Mill Canyon, and Hop Canyon areas.

Source: Los Alamos National Laboratory Report LA-UR-85-375







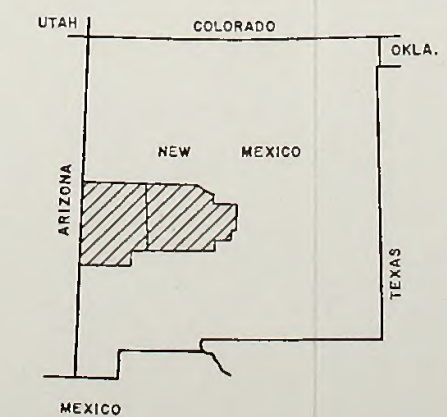
R21W R20W R19W R18W R17W R16W R15W R14W R13W R12W R11W R10W R9W R8W R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E R9E R10E

T 5 N  
T 4 N  
T 3 N  
T 2 N  
T 1 N  
T 1 S  
T 2 S  
T 3 S  
T 4 S  
T 5 S  
T 6 S  
T 7 S  
T 8 S  
T 9 S



LEGEND

-  SAND AND GRAVEL
-  SAND AND GRAVEL (MODERATE TO HIGH POTENTIAL)
-  CINDERS AND CRUSHED ROCK
-  CINDERS AND CRUSHED ROCK (MODERATE TO HIGH POTENTIAL)



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 3-5**  
**SALEABLE MINERALS**  
**POTENTIAL**







western portion of the SRA have been essentially untouched.

Saleable minerals such as sand, gravel, riprap, and cinders are continually in demand in the SRA by the New Mexico State Highway Department (NMSHD), city and county government agencies, and by private citizens or contractors (see Table 3-3). Current saleable projects in the SRA include: the SRP material site (crusher-suitable material) located about three miles northwest of Quemado; the natural cinder source located just south of U.S. Highway 60, about halfway between Quemado and the Arizona State line; a sand and gravel site to be developed by the NMSHD that is located about five miles northeast of Quemado and east of Highway 117, at Mariano Mesa; and the large riprap quarry southwest of Socorro, in the Red Canyon area. There are currently four active sand and gravel excavation sites in the SRA and permits for several others pending.

There are also two decorative stone (flagstone) sources in the SRA under BLM jurisdiction and a private source for dimension stone (Rocky Mountain Stone Company, Blue Springs Mine). The private source is located within the Sevilleta Land Grant.

## VEGETATION

The vegetation resource in the SRA varies greatly in its diversity, production, density and potential. This is largely due to the differences in elevation, climate, soil types and other factors which may influence the resource. A general description of the vegetation resource was completed from information gathered in 1977, 1979, and 1985, through range surveys and range site mapping.

## MAJOR LAND RESOURCE AREAS

The SRA contains parts of five Major Land Resource Areas (MLRAs) [U.S. Department of Agriculture (USDA) Soil Conservation Service (SCS) 1980]. These are the Arizona and New Mexico Mountains (AN-2), Western Plateaus (WP-2, WP-3), Southern Desert (SD-2), and the Canadian-Pecos Plains (CP 3). MLRAs are large geographic areas characterized by the factors noted in the preceding paragraph. The MLRAs

present a general description of the vegetation community (Appendix G, Map G-1). A more detailed description can be found in the SCS Range Site Descriptions, Section II E, Technical Guides for each MLRA.

The following is an overview of the vegetation resource for the entire SRA, including the area known as Chupadera Mesa. However, since livestock grazing on the allotments within the Chupadera Mesa area have not been analyzed in a grazing environmental impact statement (EIS), the vegetation within that area will be described separately. This information will appear under the subheading "Chupadera Mesa Area."

### Arizona and New Mexico Mountains (AN-2)

This MLRA covers the higher mountains and valleys ranging from 6,000 to 11,000 feet which occur within the central and western portion of the SRA along the New Mexico - Arizona State line. The major conifer and shrub vegetation subtypes include ponderosa pine, pinyon pine, juniper, oaks and mountain mahogany at the lower intermediate and transitional levels.

The grasslands are characterized by a variety of mid and tall grasses such as Arizona fescue, prairie junegrass, little bluestem, mountain muhly, pine dropseed, blue grama and big bluestem.

### Western Plateau (WP-2)

A vast majority of the public lands are within this MLRA. It extends from Magdalena, to the western border of the SRA along the New Mexico-Arizona State line. It is characterized by broad mesas and plateaus, mesa-breaks along with rolling to gently rolling terrain with elevations ranging from 6,000 to 7,800 feet.

The upper elevational ranges are primarily of the conifer and shrub type which includes pinyon pine, junipers, oaks with an understory of grasses such as bullgrass, little bluestem, bottlebrush squirreltail and blue grama. The grass dominated lands of the San Augustine Plains and the plains west of Quemado are

Table 3-3  
Mineral Sales (Sand, Gravel, Building Stone)

	FY-85			FY-86			FY-87		
	Number	Cu. Yards	Value	Number	Cu. Yards	Value	Number	Cu. Yards	Value
<u>SALES</u> <sup>1/</sup>									
Negotiated	3	10,110	\$ 2,528	1	30	\$ 8	5	72,900	\$ 25,050
Community Pits	64	7,773	\$ 1,962	11	40	\$ 12	0	0	\$ 0
Common Use Areas	5	12	\$ 32	3	2	\$ 8	14	761	\$ 187
<u>FREE-USE PERMITS</u> <sup>2/</sup>									
U.S. Government	7	345,300	\$86,325	1	300,000	\$75,000	9	392,500	\$135,625
State Agency	1	4,000	\$ 1,000	1	1,000	\$ 250	0	0	\$ 0
TOTAL	80	367,195	\$91,847	17	301,072	\$75,278	28	466,161	\$160,862
TRESPASS	1			1	350	\$ 90	2	40	\$ 158

<sup>1/</sup> There were no competitive sales for FY 85, 86 or 87

<sup>2/</sup> No Free-Use Permits were issued to any local agencies or nonprofit organizations for FY 85, 86, or 87



mostly of sodbound blue grama with dropseeds, bottlebrush squirreltail, western wheatgrass, and galleta mixed within. Interspersed within these grass subtypes are species making up the desert shrub type, which includes rabbitbrush, broom snakeweed, fourwing saltbush, sagebrush, and Apache-plume.

#### Western Plateaus (WP-3)

The WP-3 MLRA is found at a lower elevational level than the WP-2 MLRA. It ranges from 5,000 to 6,500 feet and is located between two mountain ranges; the Magdalena and the Socorro Mountains.

The natural grassland subtypes are the prominent features of the area. Grass species include black grama, sideoats grama, blue grama, New Mexico feathergrass and galleta. Interspersed within the grassland community are a variety of shrubs which include mountain mahogany, sacahuista, skunkbush sumac, broom snakeweed, shrub liveoak, Apache-plume, and some juniper.

#### Southern Desert (SD-2)

The SD-2 MLRA is characterized by gently sloping plains, broken mountains and the Rio Grande Valley. The elevation ranges from 3,800 to 5,200 feet.

Both grassland and mixed grass-shrubland vegetation subtypes are found in the area. The grass species occurring on the grassland sites include black grama, bush muhly, dropseeds, tabosa, blue grama, and alkali sacaton. The shrubland types include soaptree and torrey yucca, creosotebush, tarbush, sagebrush, mesquite, and some juniper. The vegetation along the Rio Grande is dominated by broadleaf species such as cottonwood, willow, and Russian olive. Most of the native cottonwood and willow have been replaced by salt-cedar and in some areas Russian olive.

#### Canadian Pecos Plains (CP-3)

The far eastern portion of the SRA is within the CP-3 MLRA. The area is characterized by gently rolling landscapes, steep escarpments

and breaks, limestone hills and gently sloping bottom lands. Elevations vary from 5,000 to 7,000 feet.

The vegetation subtypes include pinyon-juniper stands at the higher elevation with a variety of understory vegetation such as blue grama, bottlebrush squirreltail, and sideoats grama. Lower elevations support a mixture of grasses and shrubs. These may include grama grasses, western wheatgrass, galleta, and New Mexico feathergrass. The shrub types may include fourwing saltbush, winterfat, yucca, cholla and broom snakeweed.

#### POISONOUS OR NOXIOUS PLANTS

There are many species of plants within the SRA that are poisonous to livestock, some of which may cause serious problems. To a limited degree, poisonous plants will always be present on rangelands, but the real danger lies when the plants are eaten. Livestock poisoning is more often the result of poor range condition and poor management rather than merely the presence of poisonous plants. Most poisonous plants are unpalatable and will be eaten only when there is a shortage of desirable forage (Cooperative Extension Service 1982).

Some of the plants that present problems to livestock are locoweeds, larkspur, tansy mustard, threadleaf groundsel, and inkweed. The SRA maintains a herbarium list, on a computer program, of over 1,000 plant species found in the area. The program contains information regarding poisonous or noxious plants, poisonous symptoms, toxic substance, season of toxicity and more.

#### THREATENED, ENDANGERED OR SENSITIVE PLANTS

There is one plant within the area that is listed as Threatened by the U.S. Fish and Wildlife Service (FWS) (April 1985), and protected by the Endangered Species Act of 1973 (ESA). Erigeron rhizomatous (Zuni fleabane) occurs on lands northwest of Datil, New Mexico.

Ansonia fugatei is being proposed as a candidate species for protection under the

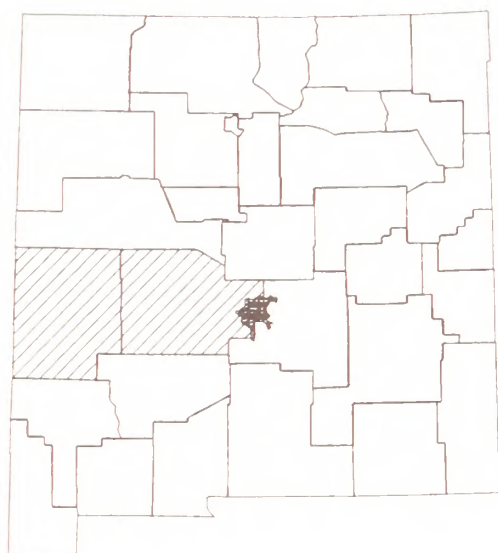
ESA. It is located east of San Antonio, New Mexico. Specific information on these plants is on file at the BLM, SRA Office. Additional species which are of concern to the State of New Mexico and occur within the SRA are listed in the RAP of the MSA.

#### CHUPADERA MESA AREA

The 121,271 acres of public land in the Chupadera Mesa Area were inventoried and mapped during 1985. SCS range site descriptions were used as the basis for mapping and naming range sites and obtaining a condition class rating for each range site.

The Chupadera Mesa Area is located in the eastern part of Socorro County as shown on Map 3-6. It lies within two MLRAs, the Canadian-Pecos Plains, and the Southern Desert. Approximately 97 percent of the Chupadera Mesa Area is in the Canadian-Pecos Plains MLRA with the remaining 3 percent in the Southern Desert MLRA. A description of these MLRAs is found at the beginning of this section.

MAP 3-6  
Chupadera Mesa



#### Range Sites and Vegetation Types

Sixteen different range sites were delineated and mapped for the Chupadera Mesa Area. The range sites are shown on the vegetation map on file in the MSA, and the acreage of each range site on public land is listed on Table 3-4.

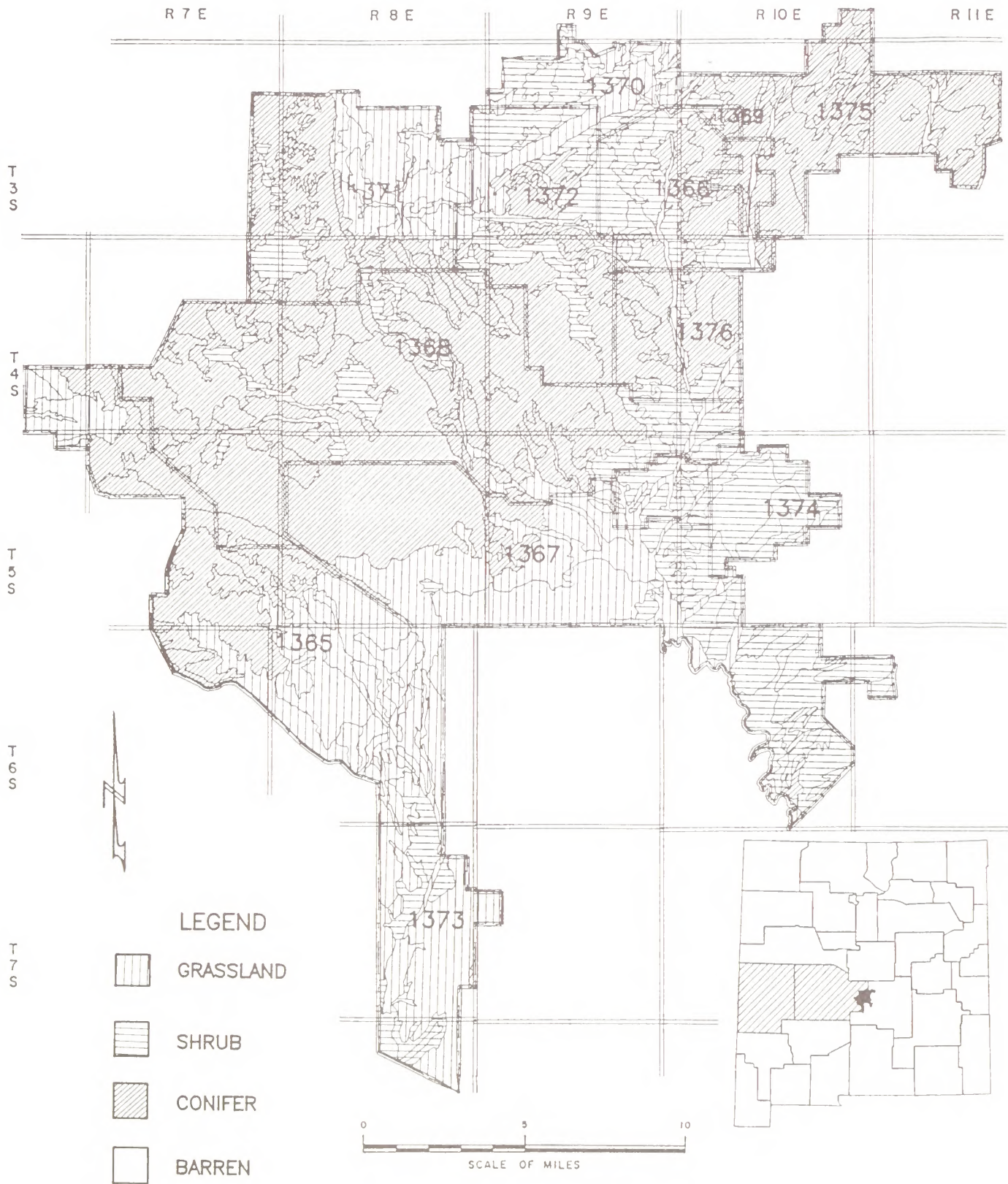
A description in detail of each range site and its plant community can be found in the SCS Range Site Descriptions, Section II E, Technical Guides for Canadian-Pecos Plains and Southern Desert Basin. The loamy range site discussed in Appendix C illustrates an example of the methods used for mapping the rangelands.

TABLE 3-4  
Public Land Acres by Range Site  
Within Chupadera Mesa Area

Major Land Resource Area	
Range Site	Acres
<u>Canadian-Pecos Plains (CP-3)</u>	
Swale	307
Shallow Limestone	754
Bottomland	2,033
Gyp Upland	13,701
Hills	11,369
Limestone Hill	28,883
Limy	14,620
Loamy	4,118
Malpais	298
Shallow Sandstone	189
Gravelly	35,244
Gyp Hills	2,073
<u>Southern Desert (SD-2)</u>	
Gravelly Sand	670
Deep Sand	343
Limestone Hills	6,608
Clayey	61
TOTAL	121,271

The inventory data gathered in 1985 shows four vegetation types: grassland, shrub, conifer, and barren along with nine vegetation subtypes covering the 16 range sites (Map 3-7). The





U. S. DEPARTMENT OF INTERIOR  
 BUREAU OF LAND MANAGEMENT  
 LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
 MAP 3-7

subtypes describe local plant communities within the area. The range site descriptions provide information as to the plant community that could be expected within a given site. Table 3-5 shows the acres by vegetation type and subtype for the Chupadera Mesa Area public land. For vegetation inventory methodology see Appendix C.

TABLE 3-5  
Approximate Acres of Vegetation Types  
and SubTypes in Chupadera Mesa

Vegetation		Approximate Acreage
Type	Subtype	
Grassland	Grass	35,444
Shrub	Creosotebush	670
	Winterfat	7,707
	Mixed desert shrub	343
	Cactus	2,548
	Yucca	9,677
	Snakeweed	517
Conifer	Pinyon-Juniper	22,182
	Juniper	42,180
Barren	Lava flows	3
TOTAL		121,271

#### Ecological Condition

Ecological condition, is expressed in terms of excellent, good, fair, and poor. It is a measure or rating of how closely the area under consideration resembles the climax plant community for the site. The condition class does not necessarily indicate how much vegetation is currently being produced; however, as a general rule, excellent and good areas produce more usable forage than fair and poor areas. The closer the range site is to its climax condition the higher the condition rating is for that site.

In the Chupadera Mesa area approximately 8,800 acres of the public lands are in excellent condition; 75,730 acres are in good condition; 35,600 acres are in fair condition; and 1,140 acres are in poor condition. Although 37,000 acres are in fair and poor ecological

condition, only 15,000 acres appear to need some type of management. The number of acres remaining are in satisfactory condition and contain valuable browse and forage for livestock and wildlife. Map 3-8 shows the ecological condition class by allotment while Table 3-6 denotes the ecological condition class acreage of public land by allotment.

#### Apparent Trend

Range trend is the direction of change in range (ecological) condition. In order to measure a change or trend in condition, observations must be made over a period of time and then compared or analyzed. Composition changes, abundance of seedlings, plant residues, plant vigor and condition of soil surface are such observations that are made and then compared (SCS 1976).

The apparent trend represents only a single year's observations and thus does not reflect long-term trend for the area. This information, however, assists BLM in directing efforts to those areas needing special attention. The apparent trend in condition for the public lands in Chupadera Mesa is 104,650 acres upward; 13,980 acres static; and 2,640 acres downward. Map 3-9 shows apparent trend by allotment while Table 3-7 denotes trend acreage on public land by allotment.

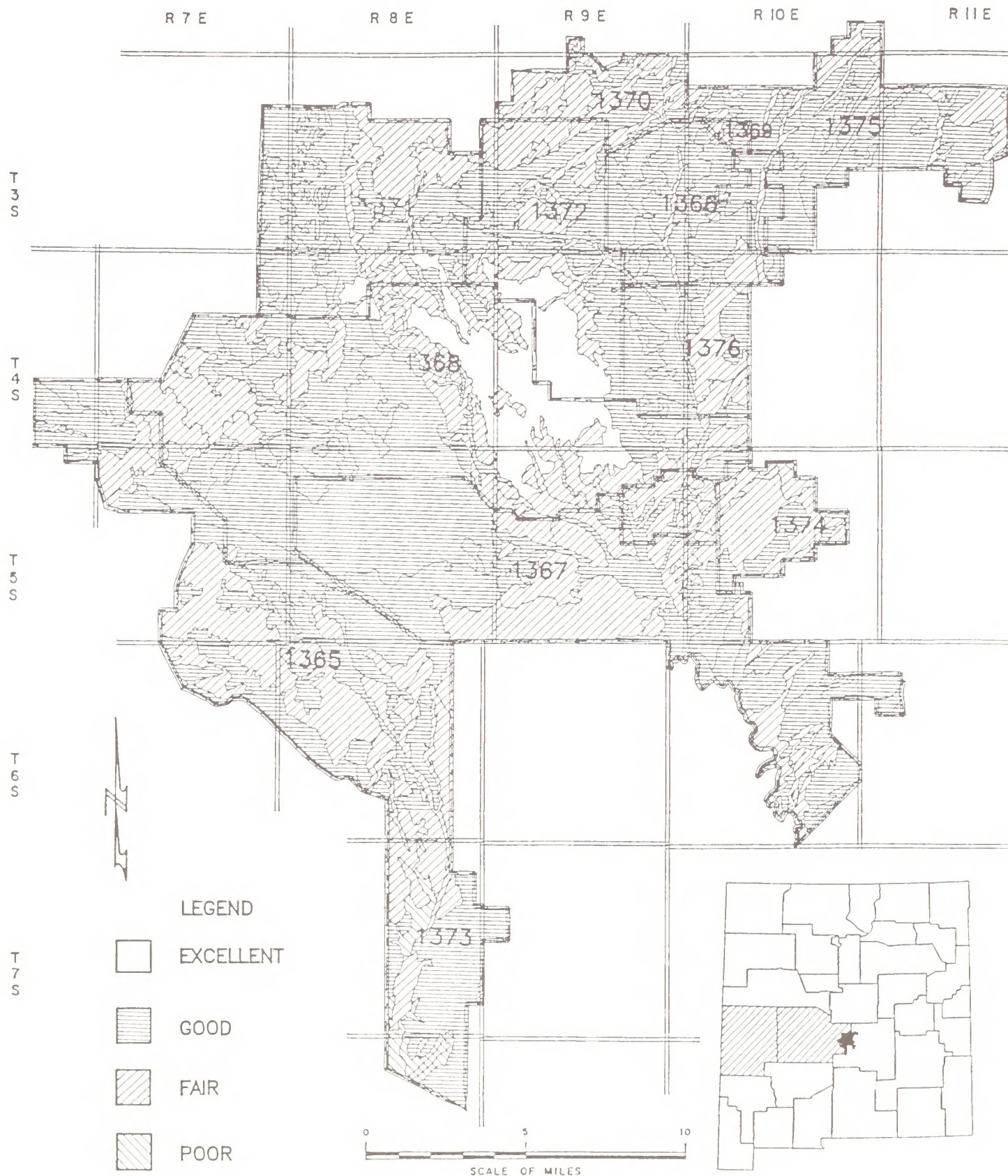
#### LIVESTOCK GRAZING

The SRA authorizes livestock grazing use on 273 grazing allotments with a total grazing preference of 231,910 Animal Unit Months (AUMs) of use on approximately 1.5 million acres of public land.

Under Section 3 of the Taylor Grazing Act of 1934, 213 allotments are permitted, and under Section 15 of the Act 60 are leased. There are 215 permittees and lessees grazing livestock on these allotments.

Of the 273 grazing allotments, all but 12 have been analyzed in a grazing EIS. The East Socorro Grazing Environmental Statement (ES) and the West Socorro Rangeland Management Program EIS documents are available for review at the SRA office. No further analysis of these allotments will be made.





U. S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

MAP 3-8

TABLE 3-6  
ECOLOGICAL CONDITION CLASS BY ALLOTMENT 1/

Allotment		EXCELLENT	GOOD	FAIR	POOR	AVERAGE CON- DITION RATING 2/
Number	Name					
1365	Black Hills Ranch	0	15,650	13,769	0	50.8
1366	Dragoo Tank	0	7,719	752	0	60.3
1367	Lobo Canyon	0	13,178	838	0	61.0
1368	Chupadera Mesa	5,607	15,828	9,068	0	59.7
1369	Lincoln County	0	483	152	0	56.5
1370	Cat Mesa East	0	1,463	3,218	0	45.3
1371	Cuate Canyon	0	3,073	597	0	58.4
1372	Largo Canyon	3,191	5,105	2,758	0	63.5
1373	Carrizozo	0	6,608	1,751	1,141	51.9
1374	Red Lake	0	61	109	0	46.5
1375	Harvey Investment Co	0	652	0	0	62.5
1376	Gallacher North	0	5,910	2,587	0	54.9
TOTAL		8,798	75,730	35,599	1,141	

1/ Public land acres only

2/ See Appendix C for average range condition methodology

TABLE 3-7  
APPARENT TREND BY ALLOTMENT 1/

Allotment		TOTAL AC	UPWARD	STATIC	DOWNWARD
Number	Name				
1365	Black Hills Ranch	29,419	27,388	1,250	781
1366	Dragoo Tank	8,471	4,788	3,683	0
1367	Lobo Canyon	14,019	13,035	261	123
1368	Chupadera Mesa	30,503	28,702	774	1,027
1369	Lincoln County	635	306	329	0
1370	Cat Mesa East	4,681	4,658	33	0
1371	Cuate Canyon	3,670	3,452	218	0
1372	Largo Canyon	11,054	7,658	2,813	583
1373	Carrizozo	9,500	7,528	1,845	127
1374	Red Lake	170	170	0	0
1375	Harvey Investment Co	652	498	154	0
1376	Gallacher North	8,497	6,467	2,030	0
TOTAL		121,271	104,650	13,980	2,641

1/ Public land acres only



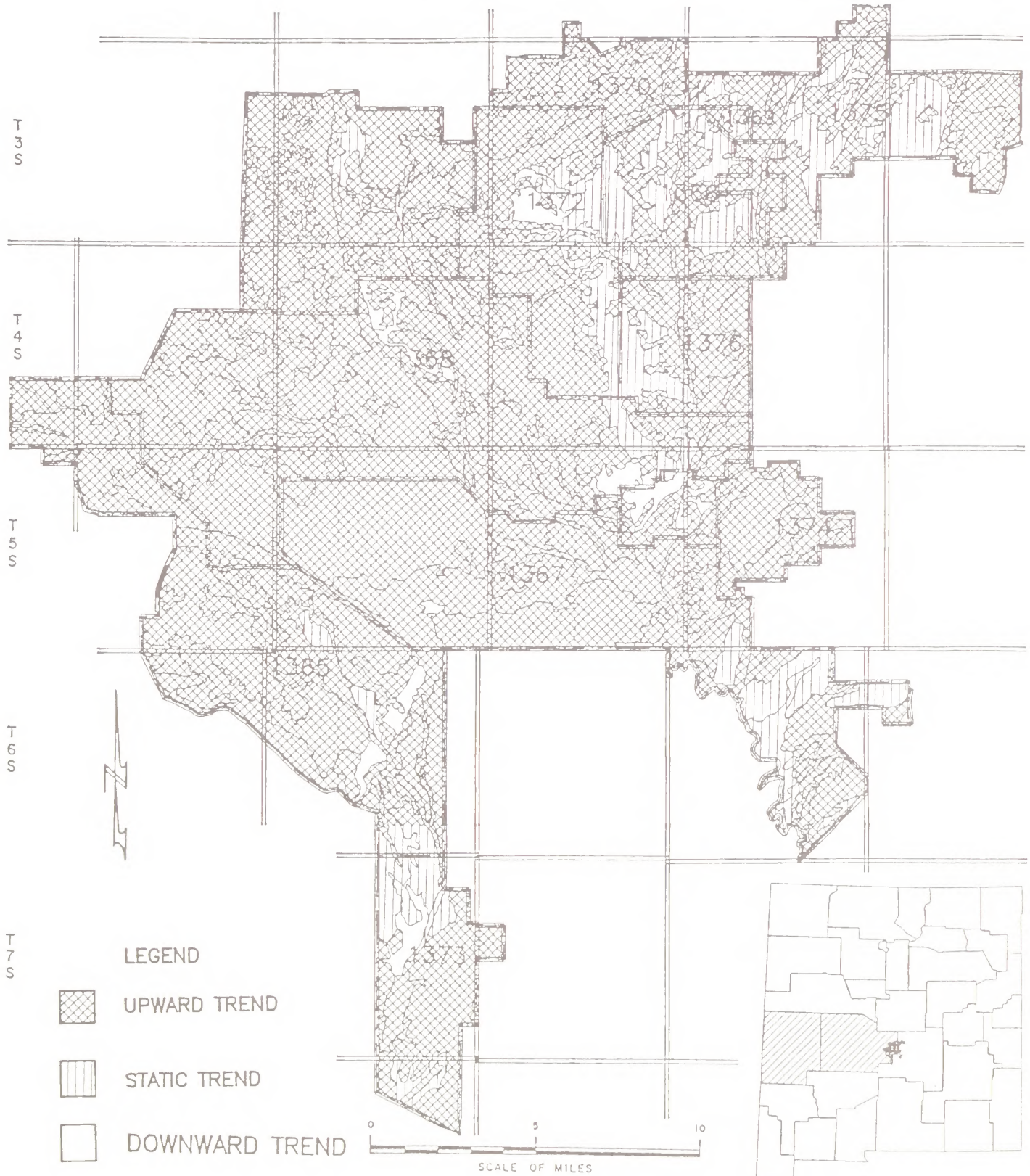
R 7 E

R 8 E

R 9 E

R 10 E

R 11 E



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LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

MAP 3-9



The 12 allotments which have not been analyzed in an EIS are those allotments located in the Chupadera Mesa Area (Map 3-10). The administration and supervision of these allotments was moved to this office as a result of the change of BLM District boundaries on July 17, 1980. Therefore, the following section entitled Chupadera Mesa Area describes that portion of the SRA where the impacts of grazing use have not been analyzed.

#### CHUPADERA MESA AREA

##### Livestock Grazing and Management

Livestock grazing is authorized on 12 allotments in the Chupadera Mesa Area with a total grazing preference of 28,008 AUMs of use on approximately 121,270 acres of public land. The allotments vary in size and capacity and consist of intermingled private, State, and public lands. The smallest allotment in terms of AUMs authorized is the Red Lake Allotment, containing 160 acres of public land with a grazing preference of 48 AUMs. The largest allotment is the Chupadera Mesa Allotment, containing 30,290 acres of public land with a grazing preference of 7,776 AUMs.

Of the twelve allotments, ten are permitted under Section 3 of the Taylor Grazing Act of 1934, and two are leased under Section 15 of the Act. There are eight permittees and lessees grazing livestock on the allotments. Map 3-10 shows land status for the allotments in the Chupadera Mesa area while Table 3-8 provides a summary of grazing use by allotment.

##### Livestock Operations

Grazing use in the Chupadera Mesa area is primarily allocated to cattle; however, a few saddle horses also use the area. The majority of the operations are commercial cow/calf enterprises, utilizing a variety of different breeds. Several of the livestock operators have Hereford cow herds. The operations differ, however, in that cow herds are crossed with bulls of different breeds such as Barzona, Simmental, Limousine, Angus, and Brahman cross. Two of the allottees run Devon cow herds; one allottee uses Simmental and

Hereford bulls, the other uses Limousine bulls with the cow herd. Two operators usually graze yearlings on their allotment on a seasonal basis from approximately May 1 to November 1.

Some of the allotments consist of a cow/calf/yearling operation. This type of operation provides more flexibility and enables an operator to take advantage of high forage producing years and keep a base cow herd during years of drought.

Two allotments [Blackhills Ranch (1365) and Largo Canyon (1372)] have existing working Allotment Management Plans (AMP). Actual use data is provided by both allottees, and precipitation data is collected. None of the AMPs have been evaluated.

All allotments in the Chupadera Mesa area have some type of grazing system. The majority use a deferred-rotation grazing system which appears to be accomplishing desired results.

The problems affecting grazing use on allotments in the Chupadera Mesa area occur in isolated instances and are confined to small areas within a pasture. Uneven livestock distribution occurs on a number of allotments. The problem, however, is not the overuse of the range, but the underuse of usable forage in some places. Topography and a lack of permanent water primarily affect the distribution of livestock. Earthen stock tanks at times do not get adequate water runoff and provide water for only short periods of time.

The invasion of undesirable shrub species such as snakeweed and cholla, and the spread of pinyon-juniper stands is a potential problem. The increase of these species increases the competition for moisture and available light, and reduces the amount of forage available for livestock and wildlife.

The situation concerning allotments in Chupadera Mesa is that they do not lend themselves to being entirely classified in the "I" category. Problems are isolated and confined to small areas. These areas, however, will be treated as "I" areas and



R 7 E

R 8 E

R 9 E

R 10 E

R 11 E

T  
3  
ST  
4  
ST  
5  
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ST  
7  
S

U. S. DEPARTMENT OF INTERIOR  
 BUREAU OF LAND MANAGEMENT  
 LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 3-10**  
 CHUPADERA MESA ALLOTMENTS

TABLE 3--8

## SUMMARY OF GRAZING USE FOR ALLOTMENTS IN CHUPADERA MESA

Allotment Number	Name	Section	Livestock		Season of Use		% of FR	Total Pref- erence	5-yr Avg.	Mgt. Plan	Mgt. Cat.
			Kind 1/	Class 2/	Beg. Date	End Date					
1365	Black Hills Ranch	3	C,H	C	0301	0228	78	6,696	5,509	AMP	M
1366	Dragoo Tank	3	C	C,Y	0301	0228	67	1,968	2,561	---	M
1367	Lobo Canyon	3	C	C	0301	0228	30	2,762	2,123	---	M
1368	Chupadera Mesa	3	C,H	C	0301	0228	54	7,776	5,110	---	M
1369	Lincoln County	3	C	C	0301	0228	100	132	132	---	M
1370	Cat Mesa East	3	C	C,Y	0301	0228	60	1,218	809	---	M
1371	Cuate Canyon	3	C,H	C	0301	0228	22	858	860	---	M
1372	Largo Canyon	3	C,H	C	0301	0228	54	2,377	2,383	AMP	M
1373	Carrizozo	3	C,H	C	0301	0228	62	2,160	1,513	---	M
1374	Red Lake	15	C	C	0301	0228	100	48	48	---	M
1375	Harvey Investment Co	15	C	C	0301	0228	100	192	192	---	M
1376	Gallacher North	3	C	C	0301	0228	82	1,821	1,353	---	M

1/ C = Cattle, H = Horses

2/ C = Cows, Y = Yearlings

3/ FR = Federal Range

4/ Licensed Use

5/ AMP = Allotment Management Plan

6/ M = Maintain



receive the needed management actions to achieve desired results. Specific recommendations will be made in activity plans.

Unauthorized livestock use is not a serious problem in the area; however, some trespass has occurred in the past and could happen in the future.

It is estimated that 830 AUMs are needed to support the existing wildlife population. Presently 500 AUMs are apportioned to wildlife. Inventory data shows the vegetation resource to be in satisfactory condition (see Table 3-6).

### WILD HORSES

With the passage of the Wild and Free-Roaming Horse and Burro Act of 1971, the authority to manage wild horses and burros on public land was assigned to the BLM and FS. The Act proclaims that wild and free-roaming horses and burros are protected from capture, branding, harassment, or death. They are to be considered, in the area where they were found in 1971, as an integral part of the natural system.

A small herd of about 40 wild horses, which is 8 animals above the specified management level, exists in the SRA on the Bordo Atravesado Allotment, 15 miles east of Socorro (See Table 3-9 and Map 3-11).

Table 3-9  
Land Status/Acres  
for Bordo Atravesado Allotment

Public Lands	Acres		Total
	Private	State	
16,493	548	2,565	19,606

Source: BLM Data 1982

Estimated numbers are based on on-the-ground counts in 1982 and 1984. This is further substantiated by actual counts made by helicopter on February 3, 1987 (See Table 3-10).

Table 3-10  
Estimated Population Levels

Year	Total Herd Number	Number Removed
1971	25 <u>1/</u>	-0-
1979	56 (including 7 Foals)	-0-
1980	Unknown	9
1982	66 (including 3 Foals)	-0-
1983	Unknown	23
1984	56 (including 6 Foals)	-0-
1985	69 (including 8 Foals)	29
1986	Unknown	-0-
1987 (Feb.)	37 <u>2/</u>	16

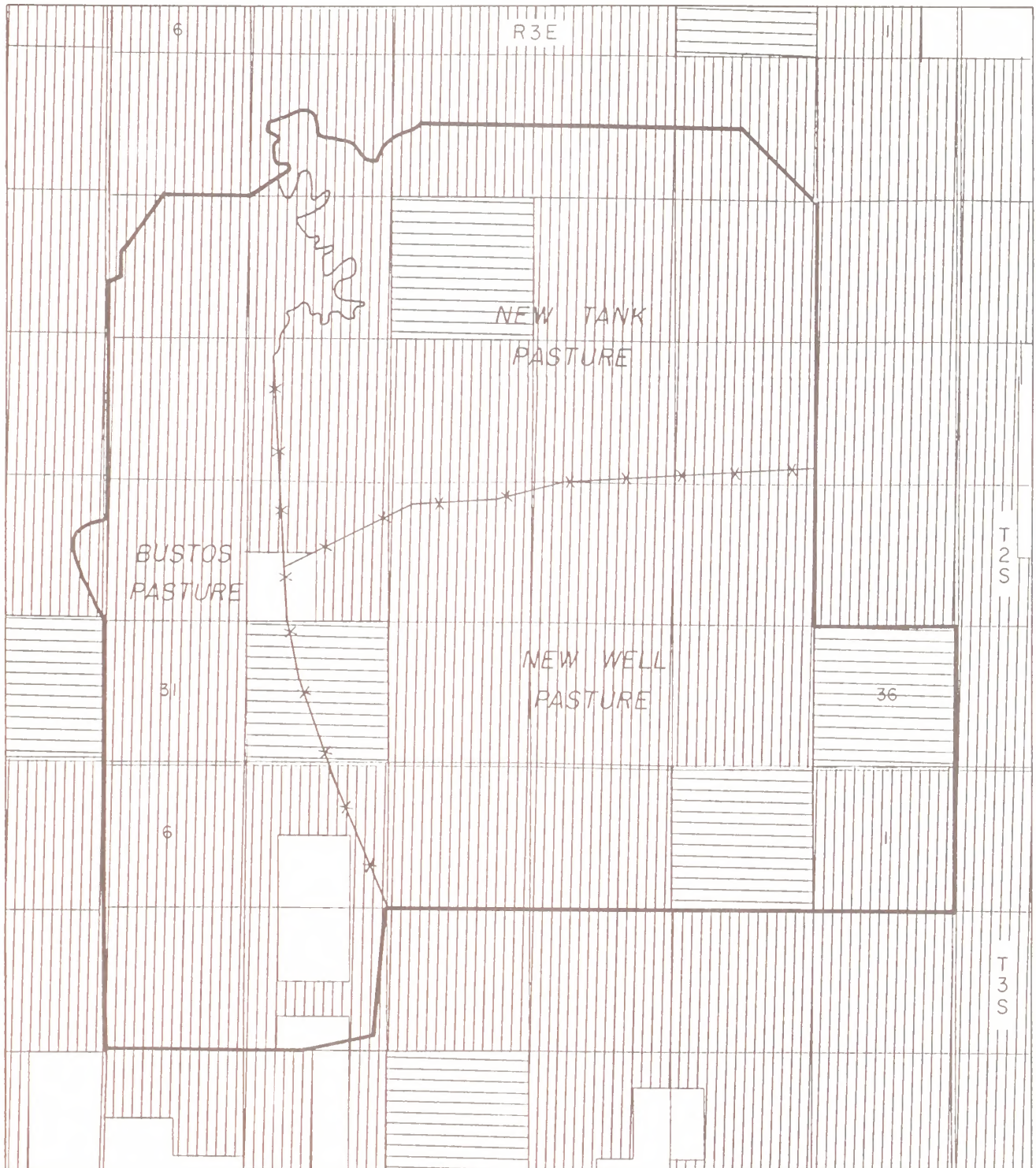
1/ Estimated

2/ Counted

A Wild Horse Management Plan (WHMP) exists on the Bordo Atravesado wild horse herd. This plan was developed in 1980 and revised in 1983 in accordance with the Wild Free-Roaming Horse and Burro Act of December 15, 1971 (Public Law 92-195) and BLM Draft Manual 4730.6.

An AMP was initiated in 1968, which resulted in fencing the herd area into three pastures. This management action has interfered with the wild free-roaming nature to some extent. Forage resources were not reserved for wild horses at the time of implementation. The AMP was revised on September 1982; at this time a 14-percent cut on livestock numbers was made to provide forage for wild horses and wildlife. Further monitoring studies indicate that there is enough forage available for 273 cattle, 32 wild horses, 19 deer, and 7 antelope (recommended numbers from the wildlife biologist) without the 14-percent reduction on the livestock numbers. Therefore, the 14-percent reduction was restored in 1983.

Apparent range condition is considered fair to good for the most part in the herd area. Range studies from 1981 and 1985 indicate that trend is static. Horses in the herd are in good to excellent physical condition.



U.S. DEPARTMENT OF INTERIOR  
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LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

# MAP 3-11

BORDO ATRAVESADO  
WILD HORSE MANAGEMENT AREA

## LEGEND

-  PUBLIC LAND
-  STATE LAND
-  PRIVATE LAND





## CURRENT PROBLEM AREAS AND SUPPORT NEEDS

A minor problem exists due to the old and deteriorating fences in the area. The horses are able to go beyond their normal herd range. This could become a major problem if maintenance is not undertaken soon. These repairs are needed to retain the horses in the currently designated herd area. There have been reports that the horses are getting over the fences and, therefore, are expanding the herd area. The horses have eventually returned, however. To further enhance the proper management of the wild horse herd, the acquisition of State inholdings needs to be considered. Also, County Road No. 2169 in the New Well Pasture may need to be acquired by the BLM.

The viability of the wild horse herd is a major concern. The wild horse herd has been confined to one allotment probably since the 1950's. In 1968 the wild horse herd area was divided into three pastures, as a result of implementing an AMP. Several aspects and characteristics of the wild horse herd tend to lean toward the fact that there may be an inbreeding situation. The horses tend to be unusually small in structure and their conformation displays characteristics which are undesirable to most domestic horse owners.

## LANDS

The BLM SRA administers approximately 1,520,610 acres of public land in Socorro and Catron Counties, located in the west-central portion of New Mexico. Public land within these two counties comprises about 17.41 percent of the total surface acres and about 62.45 percent of the mineral estate (Table 3-11). Existing land ownership patterns within the SRA are shown on the visual in the back map pocket. Catron County, which borders Arizona to the west has one of the highest percentages of Federal lands of any county in the State. BLM administers 591,540 acres of public land and the FS administers 2,192,850 acres of forest land, totalling approximately 49 percent of the total surface acres within Catron County. The public land within Catron County is generally located in two well-blocked areas. The land just west of

Quemado to the Arizona border comprises the highest density of public land within the county with the next largest block being located in the Pelona Mountain area contiguous to the Gila National Forest in southwestern Catron County. Public land is in a checker-boarded land pattern in northeastern Catron County, which extends easterly into the northwestern portion of Socorro County. This geographic location, known as the Puertecito area has historically caused the BLM numerous management problems due largely to the fragmented land pattern and inadequate access into the area.

State land within Catron County is well blocked in the Luera Peak area south and east of the Plains of San Augustine and in the northwestern portion of the county near the Zuni Salt Lake. Smaller concentrations of State land exist near the intersection of State Roads 78 and 61 just south of Pelona Mountain and again just west of Pelona Mountain south of Old Horse Springs. Major vicinities of private land holdings occur in the Plains of San Augustine, the Allegre Mountain area, and north of Pie Town to the Cibola County line.

Socorro County lies directly to the east and is quite similar to neighboring Catron County in that a large portion of the County's land, 54 percent, is Federally owned. The BLM SRA administers 929,070 acres of public land in Socorro County which is nearly twice that of Catron County making the BLM the largest single land manager within Socorro County. Federal land in Socorro County, other than that administered by the BLM, includes an administrative withdrawal [located in the southeastern portion of the County, for the Department of Army White Sands Missile Range (WSMR)], Cibola National Forest (located in the western half of the County), and the Bosque del Apache National Wildlife Refuge (located in the central part of the County along the Rio Grande). A substantial amount of private land is found in Socorro County within large land grants which generally include the lowlands of the Rio Grande Valley.

Public lands within Socorro County are fairly well blocked with only a couple of notable

TABLE 3-11  
LAND STATUS (IN ACRES)

	SOCORRO	CATRON	TOTAL	% TOTAL
SURFACE ESTATE				
Landholder/Managers				
BLM	926,0700	591,540	1,520,610	17.41
Forest Service	614,010	2,192,850	2,806,860	32.14
Park Service	370	520	890	0.01
Bureau of Reclamation	2,120	-0-	2,120	0.03
U.S. Fish & Wildlife Service	328,260	-0-	328,260	3.76
Military Withdrawal	428,710	-0-	428,710	4.91
Indian	64,300	620	64,920	.74
State	540,110	503,310	1,043,420	11.95
Private	1,385,940	1,150,530	2,536,470	29.05
TOTAL	4,292,890	4,439,370	8,732,260	100.00
MINERAL ESTATE				
BLM Administered				
All Minerals	1,388,260	846,180	2,234,440	25.59
Coal Only	22,650	730	23,380	.27
Oil, Gas and Coal Only	40	1,650	1,690	.02
Oil and Gas Only	12,540	19,020	31,560	.36
Other	3,060	11,000	14,060	.16
USFS Administered				
All Minerals	612,220	2,178,010	2,790,230	31.95
WSMR Administered (excluded from development)	428,710	-0-	428,710	4.91
No Federal Minerals	1,825,410	1,382,780	3,208,190	36.74
TOTAL	4,292,890	4,439,370	8,732,260	100.00



exceptions. Scattered tracts of public land are primarily located in the extreme northwestern and southwestern corners of the county, where management abilities are hampered by the remote and inaccessible nature of these lands. The primary, well-consolidated blocks of public land within Socorro County are the Ladrone Mountain area, the lands surrounding the community of Socorro extending east across the Rio Grande to Chupadera Mesa and the lands east and west of the Pedro Armendaris Land grant. To a lesser extent, consolidated public lands, which are the remnants of the old Magdalena Stock Driveway, extend in a linear pattern from the town of Magdalena west across the Plains of San Augustine into Catron County.

The primary concentrations of State-owned lands within Socorro County occur in the northern portion of Chupadera Mesa and to a lesser extent east of Datil from the Catron County line east where it butts up against the Gallinas Mountains administered by the Cibola National Forest.

Although the SRA is characterized by its rural qualities, with its vast open spaces and sparse population, it is not without some urban and suburban development. The City of Socorro is by far the most densely populated community within the SRA and is expected to continue to grow at a stable rate.

The BLM SRA lands and realty program expends much of its efforts within the vicinity of Socorro entertaining routine right-of-way requests, Recreation and Public Purpose (R&PP) applications, and various other land-use proposals in conjunction with the continuing growth needs of Socorro and its nearby communities. However, by far the greatest single effort of SRA's lands and realty program is the implementation of the Middle Rio Grande Occupancy Resolution Program (MRGORP).

This program, initiated in 1976 with the surveying of the exterior boundaries of small scattered tracts of public lands within the Rio Grande Valley, is scheduled to be completed by the end of fiscal year 1990. The land decisions within the Middle Rio Grande

Management Framework Plan (MFP) mandated the disposal of the majority of public lands within the Valley via public sales or the nondiscretionary Color-of-Title Act, with the remaining public lands within the Valley being retained and managed by multiple-use concepts.

These remaining public lands, generally bounded by the Sevilleta Land Grant to the north, the Bosque del Apache Wildlife Refuge to the south, Interstate 25 to the west and the Bosquecito Road to the east have, however, proven to be somewhat difficult to effectively manage. The exact location of these remaining tracts are still somewhat difficult to identify and access to the parcels of public land is difficult if not impossible.

The disposal actions of the MRGORP have been designed primarily to resolve long-standing title disputes which date back to as early as the Treaty of Guadalupe Hidalgo of 1848, when the United States agreed to recognize old Spanish and Mexican land grants. Yet, in 1882, the Socorro Land Grant, which originally stretched from the Sevilleta Land Grant on the north to the Bosque del Apache Land Grant on the south, was reduced to its present size by the U.S. Surveyor General. This left hundreds of families within the Rio Grande Valley without legal title to their lands.

The Small Holding Claim Act of 1891 was passed in an effort to remedy these title problems, yet for a variety of reasons many of these claims never went to patent. Congress, through the passage of the Color-of-Title Act of 1922, made further attempts to rectify any title disputes for those people who have made valuable improvements to the land and who have held a claim to the land under peaceful adverse possession by themselves or predecessors for more than 20 years.

As of November 1986, approximately 160 color-of-title applications have been filed with the SRA office, of which approximately 135 patents have been issued or are in the process of being issued. An additional 90 patents have been issued or are in the process of being issued in the Valley as a result of public sales since the program's inception.

Outside of the Rio Grande Valley the primary use of the public lands is livestock grazing. This use is in most cases continuing simultaneously with other land-use authorizations, many of which make up the remainder of the SRA lands and realty program.

Included in these authorizations are a variety of leases and permits, often times in conjunction with research projects through the New Mexico Institute of Mining and Technology (NMIMT), exchanges, communication site rights-of-way, and R&PP leases and patents, issued to the small communities of Pie Town, Quemado, Datil, Horse Springs, San Antonio, and Lemitar for cemeteries, gun clubs, sanitary landfills, and recreational facilities.

Many of the linear facilities authorized under various right-of-way grants have led to the establishment of defacto right-of-way corridors. Three officially designated corridors are also existent within the SRA as a result of previously completed MFPs and MFP amendments. The placement of the facilities have in the past been largely due to topographic and land status constraints.

#### ACCESS

The Socorro County Transportation Plan, approved November 7, 1981 and the Catron County Transportation Plan, approved October 27, 1982 provide road inventories for all known existing Federal, State, County and private roads within the SRA. No new roads either legal or in trespass are known to have been built in the SRA since the approval of these documents. These plans are similar in that they did not attempt to develop acquisition, construction or maintenance schedules nor did they attempt to set priorities.

Existing transportation facilities within the SRA include Interstate 25, which runs north to south through Socorro as it parallels the Rio Grande. U.S. Highway 60 enters Catron County north of the Gila National Forest and traverses easterly, linking the communities of Quemado, Pie Town, Datil, Magdalena, and Socorro. U.S. Highway 60 then runs north

concurrently with I-25 until it reaches Bernardo where it leads east out of the SRA. U.S. Highway 380 begins at the community of San Antonio and leads east to Bingham and then out of the SRA to Carrizozo and on into Texas. Travel along Highway 380 can be restricted at certain times due to WSMR missile firings, yet is seldom closed for more than a few hours. U.S. Highway 180 extends from the Arizona border west of Reserve, south through the Gila National Forest out of the SRA and on to Silver City and Deming.

At the present time, the New Mexico State Highway Engineer's plans involve only maintenance for the existing roads as there are no proposals to construct new Federal highways within the SRA.

The State of New Mexico maintains nine State roads within the SRA. The most highly travelled is paved State Road 12 as it links Datil and U.S. Highway 60 to U.S. Highway 180, just west of Reserve. Other paved or partially paved roads include State road 117, the northern portion of State Road 52 from Magdalena to the Alamo Indian Reservation and the southern portion of State Road 32 from Apache Creek to Quemado. State Roads 61, 117, 36, 78, 107, and 10 remain unpaved with no immediate plans for upgrading.

Numerous county roads under the jurisdiction of Socorro and Catron Counties traverse nearly all portions of the SRA and can be further seen on the visual in the back map pocket. Catron County maintains in excess of 1,000 miles of county roads, with 417 miles affecting BLM operations, while Socorro County maintains nearly 2,000 miles of county roads of which approximately 978 miles affect BLM.

The Atchison Topeka and Santa Fe Railway Company maintains railway facilities which parallel the Rio Grande and Interstate 25 as it dissects the SRA. Four public airports are located within the SRA in the communities of Socorro, Magdalena, Reserve, and Glenwood with an additional eleven privately-owned landing fields.

Historically BLM's transportation network has primarily utilized the Federal, State, and



County road systems. The easement acquisition program within the SRA has been relatively inactive, largely due to this fact and to minimal funding levels. Easement acquisitions have generally been pursued only when access has been unavailable to specific BLM-initiated projects. Past easements have been acquired through the Kubina Ranch to Horse Mountain, and for BLM roads known as the Quebradas Road and the Conant Road, while negotiations are now being made to acquire easements for the Fort Craig and Cottonwood Canyon Roads. BLM also maintains the 1.4 mile road and 2.6 mile trail within the BLM Datil Well Campground.

Access concerns have steadily increased over recent years as demand upon the public lands has multiplied. Existing land-use plans briefly address access support needs; yet, the emphasis on acquiring these easements has rarely materialized.

## FORESTRY

The forestry program conducted by the SRA consists of managing limited ponderosa pine stands and more extensive pinyon-juniper woodlands. The Federal Land Policy and Management Act (FLPMA) directs that the forestry and woodland programs be managed on the basis of multiple use and sustained yield. Also, the Material Disposal Act of 1947, as amended, establishes the authority under which the BLM disposes of timber and other forest products.

### TIMBER

The long-term goal of managing the ponderosa pine stands in the SRA is to encourage natural regeneration and increase stand vigor, as well as the reduction of woodland encroachment into the ponderosa pine stands. The SRA supports less than 11,000 acres of ponderosa pine forest. These productive forests are located primarily on the small, isolated mountains scattered throughout the SRA. Most of the pine forest areas are under wilderness study area (WSA) designation, and providing for the long-term maintenance of the pine stands through naturally occurring fire, is the principal goal of the program at this time.

The existing ponderosa pine is managed for the enhancement and protection of the stands rather than the maximization of forest products. All forestry practices currently being implemented are in conformance with the standard silvicultural practices and the 1981 environmental assessment (EA) Timber Management Plan covering the BLM Albuquerque District and the former Socorro District. This document is available for review at the BLM Albuquerque District Office.

Due to poor stocking, resulting from timber harvest and the lack of natural regeneration, the present available timber volume-per-acre is quite low. Except for a few exceptional stands on the better sites, most of the forest is "marginal" for intensive timber production. Based on normal yield tables for ponderosa pine, many areas are considerably understocked. A declining trend has been observed on many of the poorer sites where harvesting has taken place and where pinyon pine has quickly invaded the site to further preclude the opportunity for natural regeneration. Some sites are abnormally rocky due to the past geological activity and contain more undesirable species than desirable ones. Forests located on the steep slopes and inaccessible areas are suffering a downward trend due to lack of silvicultural treatments, primarily timber harvesting and thinning. These stands are typically overmature and have a high mortality rate. The older age classes appear to dominate most of the sites. Very little natural regeneration of the desirable tree species is occurring. Encroachment of pinyon-juniper woodlands into the pine forest is quite common.

Steep topography is one factor limiting harvest, but technology has advanced to a degree that areas previously not economically feasible to harvest are now considered to be harvestable.

Many forest stands are also experiencing a high mortality rate due to insect and disease infestations in the overmature trees. Mistletoe problems are quite prominent in the Horse and Pelona Mountains and continues to be a detriment in spite of the control actions in the past. These forests indicate poor vigor

resulting from old age, poor sites and extended droughts.

#### WOODLANDS

Approximately 350,000 acres of public lands in the SRA are dominated by a forest type known as "woodlands". This term is used to describe a pinyon pine/juniper climax species. Depending upon the elevation, aspect, soils, and the availability of water, the dominate species can vary. Usually, the juniper will be more numerous on the more arid sites and on the southwestern aspects. The pinyon require more water to survive than the juniper and dominate the north-facing slopes and the higher, cooler elevations with the better soils.

Woodlands are found scattered throughout the SRA. Normally, the woodlands consist of an overstory of older trees with an understory of grass, brush, and younger trees. Browse and grass production is greater when the woodlands are young but as the stand matures, shading increases along with intensive competition, and limits the understory vegetative production.

Many acres of woodland are not suitable for intensive management due to the rough topography, excessive amount of rocks and boulders, lack of access, immature stands, understocking and generally poor site conditions. At this time, about 40 percent of the woodlands is being managed on a sustained-yield basis; while the remaining 60 percent is not regenerating fast enough to replace itself. In some cases, the woodlands are managed in such a manner as to prevent the reestablishment of the stand in order to promote other resource management objectives. For example, pinyon-juniper woodlands have been intentionally reduced in the past to develop wildlife habitat and promote the growth of ponderosa pine stands. Another example would be to eliminate some woodlands to increase livestock forage.

The first priority sources for woodland products, primarily fuelwood, would be on areas previously treated by mechanical or chemical means. These areas would be salvaged

first and greenwood areas utilized last. Specific silvicultural standards are established at the activity planning stage and are written on a site-specific basis. The silvicultural standards are consistent with acceptable methods for the species and the site. The present woodland uses consist of harvesting for fuelwood, fence posts, Christmas trees, and wildings. At least 50 percent of the SRA is open to these sales.

The woodlands are being inventoried during the 1987 field season by the Intermountain Research Station at Odgen, Utah. The inventory is being done in cooperation with the FS, New Mexico State Division of Forestry, and other agencies. The purpose is to obtain readable inventory information of the woodland and forest resources. Other inventories have been completed in the past on the commercial forests of New Mexico, but this is the first effort directed specifically toward woodland resources. When information from this inventory is analyzed and a report becomes available, more realistic woodland and forest activity plans can be prepared.

#### SOILS/WATER RESOURCES

##### SOILS

The soil information for Catron County is available in the Catron County Soil Survey report, which was published in 1985 by the SCS. The Socorro County survey is unpublished, pending final correlation. Soil data for that portion of the SRA that extends into Lincoln County is available in the Lincoln County Soil Survey, published in 1983. For a description of the soil types in the SRA, see Table G-1 in Appendix G.

Parts of five MLRAs occur in the SRA (USDA SCS, 1980) (Appendix G, Map G-1). The MLRAs are the classification index used to separate geographic areas on the basis of topography, geology, and climate, including temperature and moisture regimes, both of which have a major influence on soil development.

A large part of the SRA has elevations ranging from 5,000 to 7,000 feet. In this area there are two MLRAs: the Western Plateaus (WP-2,



WP-3), and the Canadian Pecos Plains (CP-3). Soils in these areas were formed in mesic (cool) temperature regime and aridic-ustic (moderate) moisture regimes. The lower elevations (below 7,000 feet) in the SRA are Southern Desert (SD-2) MLRA, with soils forming in a thermic (warm) temperature regime, and aridic (dry) moisture regime. The higher elevations (above 7,000 feet) in the SRA are mostly in Catron County in the Arizona and New Mexico Mountains (AN-2) MLRA. These soils are formed in areas receiving higher annual precipitation and with lower mean annual temperatures.

#### Soil Salinity

Saline soils within the SRA are comprised primarily of the Catman series and are located in swales, broad drainageways, and playas of northwestern Catron County. These soils contribute to the salinity of the Little Colorado River system, which falls under the jurisdiction of the Colorado River Salinity Control Act. In addition, saline soils of the Holloman series are located in the Jornada Closed Basin on the eastern portion of Socorro County. The Holloman soils are commonly found in association with the Netoma, Yesum, and Tanbark series.

#### Soil Erosion

Two major types of soil erosion by water occur throughout the SRA: sheet erosion and gully erosion. Sheet erosion is most common on gentle slopes where the water course is less defined. Runoff can spread over vast areas. If the soil surface is not protected by vegetation or other ground cover, top soil is removed by the runoff water.

Gully erosion is prevalent where runoff water becomes channeled. Vehicle tracks and livestock trails contribute to gully erosion by providing a water course, as do roads that are not properly water barred.

There are five general areas of critical watershed (soil erosion) within the SRA: Stallion, Puertecito, Chavez Draw, Fence Lake and Rancho Alegre. Parts of the Stallion, Puertecito, and Fence Lake areas are proposed as SMAs.

Soil susceptibility to wind erosion is determined primarily by the surface texture, percent calcium carbonate, and moisture content of the soil. Soils of sandy and silty surface textures, with sparse ground cover are most susceptible to wind erosion.

There are several areas in the SRA that have active wind erosion. Most of the areas are mesquite dunes along the east side of the Rio Grande and are relatively small. Soils in these areas are typically sandy textured with dunes formed around woody shrubs. West prevailing winds during the spring months cause active soil blowing on these areas.

### WATER RESOURCES

#### Surface Water

The major surface basin in the SRA is the Rio Grande. This basin is bounded on the west by the Continental Divide and by ridges east of the River. The Little Colorado River basin is west of the Continental Divide. This basin is on the upper end of the Lower Colorado River basin system in New Mexico. Tributaries to both these drainage systems flow only in times of heavy storms. The Jornada del Muerto and the Tularosa basins on the east side of the SRA have no outlets, and are part of the Central Closed Basin system. The San Augustine Plains are part of the Western Closed Basin system. These basins are dry most of the time, but may have standing water during periods of high runoff.

The major tributaries of the Rio Grande are the Rio Puerco and the Rio Salado. There is very little of the Rio Puerco drainage area in the SRA; however, it does enter the Rio Grande in Socorro County near Bernardo. Flow within major streams and their tributaries comes after storm events and exhibits strong seasonal trends. The Rio Puerco and Rio Salado experience 64 percent and 88 percent, respectively, of their total annual runoff in the summer months.

Quality standards for surface water in New Mexico have been adopted by the Quality Control Commission to protect and sustain designated uses. General quality standards

apply at all times to all surface waters of the State which are suitable for recreation and support desirable aquatic life. Surface water quality in the Rio Grande Basin is extremely variable due to high evaporation rates and leaching of salts and other solids.

The water quality problem created by the high sediment production is reflected in the annual sediment yields for the Rio Puerco and Rio Salado. Monthly sediment yield data for the two rivers indicates that July, August, and September contribute approximately 17, 45, and 20 percent, respectively, of the total annual sediment produced from these watersheds (Kantz et al 1977); thus, sediment production is greatest during the period of intense thunderstorm activity. Most of the water from these two rivers is suitable for livestock and wildlife, but unsuitable for human consumption, due to unpalatable taste and laxative effect caused by the high salt content.

In the stretch of the Rio Grande downstream from Albuquerque to Elephant Butte Reservoir, higher than desirable concentrations of iron, manganese, nitrogen compounds, phosphorus compounds and coliform bacteria have been recorded (New Mexico Water Quality Commission 1975).

The San Francisco and Gila Rivers drain from the SRA as part of the Lower Colorado River Basin in western Catron County. These two streams have the fewest tons of sediment per square mile in the State. These perennial streams contain water of suitable quality for livestock and wildlife consumption.

The Jornada del Muerto, Tularosa, and San Augustine Plains are closed basins that have no outlets. There is little surface water quality information on these basins.

#### Groundwater

The Rio Grande is the major basin in the SRA. This basin makes up about two-thirds of the area. The aquifers of the Rio Grande basin are predominantly of the valley fill and the bedrock types. Valley fill aquifers include quaternary age alluvium and floodplain

sediments that are saturated with water on the Rio Grande Valley floor and in the valleys of its major tributaries. The bedrock aquifers are composed mostly of sandstone, conglomerate, or limestone (New Mexico State Engineer's Office). Recharge of the Rio Grande aquifers is mainly by infiltration from the Rio Grande; however, some infiltration occurs from the Rio Grande tributaries and irrigation seepage. Three remaining basins within the area are the Jornada del Muerto (closed basin), Bluewater, and Gila-San Francisco. Groundwater resources in the Jornada del Muerto are of varying depths.

Groundwater resources in the Rio Salado drainage are not well known. However, water is available at shallower depths in arroyos and streams (Kantz et al. 1977). Generalized groundwater maps indicate that this area is underlain by a thick extensive aquifer system which extends under the San Augustine Plains (USGS 1972).

Groundwater in the Bluewater and Gila-San Francisco aquifers occurs in the Triassic age sandstones, and Permian age limestones and sandstones. Aquifer yields are extremely variable and are generally less than 10 gallons per minute (GPM), but sufficient for livestock purposes.

Groundwater quality is highly variable since wells and springs draw water from both shallow valley fill aquifers and deep bedrock aquifers. Overall, groundwater is good in most of the SRA, except for some isolated areas. Groundwater in both the Rio Puerco and the Rio Salado drainages is of poor to fair quality due to the abundance of soluble minerals in both alluvial deposits and bedrock formations found in this area (Spiegel 1955).

Groundwater in the Jornada basin is of poor chemical quality (New Mexico Geological Survey 1955). The highly mineralized alluvium and bedrock deposits in the basin provide mostly saline water that is not potable and often unfit for livestock (New Mexico Geological Survey 1955).

Groundwater quality in the Bluewater and Gila-San Francisco basins ranges from good to



poor. Analysis results indicate most groundwater in these basins do not exceed maximum contaminant levels set by the State and the Environmental Protection Agency (EPA) for public water supplies and livestock waters.

A feature of interest in the western end of the SRA is Zuni Salt Lake. This saline lake is located approximately 15 air miles northwest of the community of Quemado in sections 30 and 31, T. 3 N., R. 18 W. Little is known of the hydrology of the lake which is approximately 3/4 mile in width at its widest point. The source of the lake is believed to be primarily groundwater. The lake is surrounded by basalt of the Quaternary age and mancos shale of the Cretaceous age. The lake is apparently a crater created by a volcanic explosion (Mineral and Water Resources of New Mexico, USGS et al. 1965).

Water rights for the use of surface and groundwater in the State are administered by the State Engineer. The SRA has parts of three major declared groundwater basins (the Rio Grande, the Gila-San Francisco, and Tularosa) and parts of two undeclared basins.

The primary use of water on the public rangelands in the SRA is by livestock and wildlife. Most of the water provided for this purpose is depleted in two ways: 1) water consumption by livestock, 2) evaporation from facilities constructed to furnish water supplies. The total water depleted annually is estimated to be 603.8 acre feet, consisting of 270 acre feet consumed by livestock, 3.8 acre feet consumed by wildlife, and 330 acre feet of evaporation from earthen stock tanks. The East Socorro Grazing ES (BLM 1979) and the West Socorro Rangeland Management Program EIS (BLM 1982) contain detailed additional information on soil and water resources in the SRA.

#### AIR QUALITY

Air quality is generally affected by natural terrain and emissions. Ridges and high elevation areas usually experience better dilution and dispersion of pollutants than do valleys and low elevation areas. Other factors affecting air quality are depth of the mixing layer and height of emission release.

Emissions, in the form of windblown fugitive dust from dirt roads and barren soils, cause impaired visibility. Human-caused emissions from vehicles, chemical combustions, and industrial processes cause a variety of human and animal physiological impairments with damage to structural materials, paint, fabric, and natural vegetation.

The air quality of the SRA is very good as the area is sparsely populated and, for the most part, undeveloped with population centers being not large enough to generate significant amounts of air pollutants. Also, there are no major industries or factories within the area. The primary source of air pollution in the SRA is particulate matter generated from intermittent dust storms, which are probably minimal, localized, and of short duration. Specific pollution levels due to dust are not known, however, and at present are not considered to detract from the good air quality of the SRA.

There are two types of areas vulnerable to decreasing air quality in the SRA. Type I locations are localized areas of extensive development such as surface mining and coal-fired power plants. Type II locations are structural depressions such as the Rio Grande Valley that experience atmospheric drainage.

#### FIRE

Between 1968 and 1987, there have been 31 fires on lands now administered by the SRA. During those years, annual ignitions ranged from zero in 6 of the 18 years to ten ignitions in 1971. Just over 14,700 acres burned during the period; however, 81 percent of that occurred during just one year-1971.

With only 31 fires in 18 years, it would perhaps be meaningless to attempt to analyze the fire cycles. Even in the three-cluster areas where fires occurred in the same township at least every 3 to 4 years, they probably did not reburn any area in the entire 18 years. No information is presented here to confirm that reburning has not occurred; however, the small size and low frequency of the fires suggest that it has not happened.

Although little site-specific information on pre-settlement natural fire frequency is available, it could be suggested that natural fires were more common than they are today. Lightning may have been no more common, but perhaps more cloud-to-ground strikes turned into running fires than is currently the case. Without livestock grazing, light fuels should have been abundant, continuous, and easily ignited. Such a situation could be envisioned for most vegetative types in the SRA, with the creosote type being one exception.

In the past 18 years, man-caused fires comprised one-third of all ignitions. With an increase in recreational use of BLM lands and/or a growing resident population, the chances of increasing the percentage of man-caused fires would seem to grow. Changing levels of resource utilization or changing vegetation patterns, however, could affect this.

Management strategies as they relate to suppression, both full and limited and prescribed fire, are detailed in the District Fire Management Activity Plan, 1986 as revised.

## WILDLIFE

Wildlife habitat and wildlife species have been identified and inventoried utilizing the Bureau's Integrated Habitat Inventory Classification System (IHICS). Seventeen distinct Standard Habitat Sites (SHS's) have been mapped within the SRA based on landforms and vegetation (See Tables 3-12 and 3-13 for a summary of the SHS data). The wildlife species list and SHS descriptions are in the Socorro MSA wildlife section and in the Socorro IHICS computer program which are both on file in the SRA Office.

## BIG GAME

### Mule Deer

Mule deer can be found throughout the SRA. Most of the better deer habitat is found on the Conifer Mountain, Pinyon-Juniper Hill, Arroyo-Riparian and Riparian SHS's. Table 3-14 indicates the SHS's utilized by deer.

The New Mexico Department of Game and Fish (NMDG&F) Comprehensive Plan (1986) estimates that mule deer numbers are increasing in all herd management units within the SRA. Although increasing, the current mule deer population is estimated to be less than 50 percent of the habitat's optimum capability. Fecal analysis studies have indicated that competition for forage between mule deer and cattle is greatest during the winter and spring. This information, combined with the fact that the majority of mule deer habitat on public lands in the SRA is subjected to 12 months per year of livestock grazing, indicates that forage may not be adequate.

The herd units shown on Map 3-12 are those areas where the habitat is believed to be capable of supporting .5 or more deer per section.

### Pronghorn

Pronghorn utilize areas within every SHS within the SRA (see Table 3-14). Pronghorn population densities vary from less than one animal per 1,000 acres to over three animals per 1,000 acres in the SRA. Occupied pronghorn habitat is identified on Map 3-13.

The NMDG&F Comprehensive Plan (1986) estimates that pronghorn numbers for the SRA are increasing. Pronghorn numbers are approximately 50 percent of the optimum for the existing habitat's capability. Fecal analysis studies indicate that dietary overlap between pronghorn and cattle exists for spring and summer forbs. These studies also indicate that with yearlong livestock grazing on the majority of the allotments, dietary overlap for browse between pronghorn and cattle exists during the fall and winter.

### Elk

Elk habitat within the SRA exists in the Conifer Mountain, Pinyon-Juniper Hill, Half Shrub Hill and Rabbitbrush Grama Hill SHS's (see Table 3-14). However, yearlong elk use only occurs in the Pelona Mountain area, Horse Mountain area, and the Chupadera Mesa area (see Map 3-14).



Table 3-12  
STANDARD HABITAT SITES COMPARISON DATA

SHS	SHS Acres	Number of Vertebrate Species Using SHS	Average Observed Species Densities - K.M.S.Q.			Vegetative Canopy Cover %
			Mammals	Birds	Reptiles & Amphibians	
Creosote Hill	309,345	98	99.718	43.428	21.563	2.422
Mixed Shrub Rolling Upland	18,449	118	62.836	23.647	23.142	4.761
Mixed Shrub Hill	83,746	114	54.640	ND	23.930	7.021
Half-Shrub Hill	236,392	131	51.849	13.234	ND	1.202
Mesquite Rolling Upland	160,560	103	45.078	0.200	31.818	1.193
Grass Rolling Upland	173,087	93	54.640	ND	36.916	1.480
Arroyo-Riparian	62,244	209	91.110	18.250	20.870	2.706
Riparian	8,728	315	62.836	9.600	26.159	5.841
Lava	306,162	98	109.280	46.538	33.200	1.205
Conifer Mountain	46,074	332	134.150	12.962	ND	ND
Creosote Questa	77,808	104	136.600	4.000	25.004	1.515
Pinyon/Juniper Hill	1,381,195	355	81.960	9.614	5.810	2.491
Rabbitbrush/Grama Hill	65,300	128	29.628	50.900	ND	3.660
Sacaton/Thistle Valley	38,390	132	35.389	16.093	ND	ND
Saltbush/Grama Valley	28,420	153	18.829	25.714	ND	1.956
Shrub Pediment	413,278	141	40.980	45.600	37.029	1.758
Mixed Shrub Hogback	10,740	114	ND	ND	ND	ND

ND = No Data  
K.M.S.Q. = Kilometer square

Table 3-13  
NUMBER OF SPECIES BY MAJOR GROUPING USING EACH STANDARD HABITAT SITE

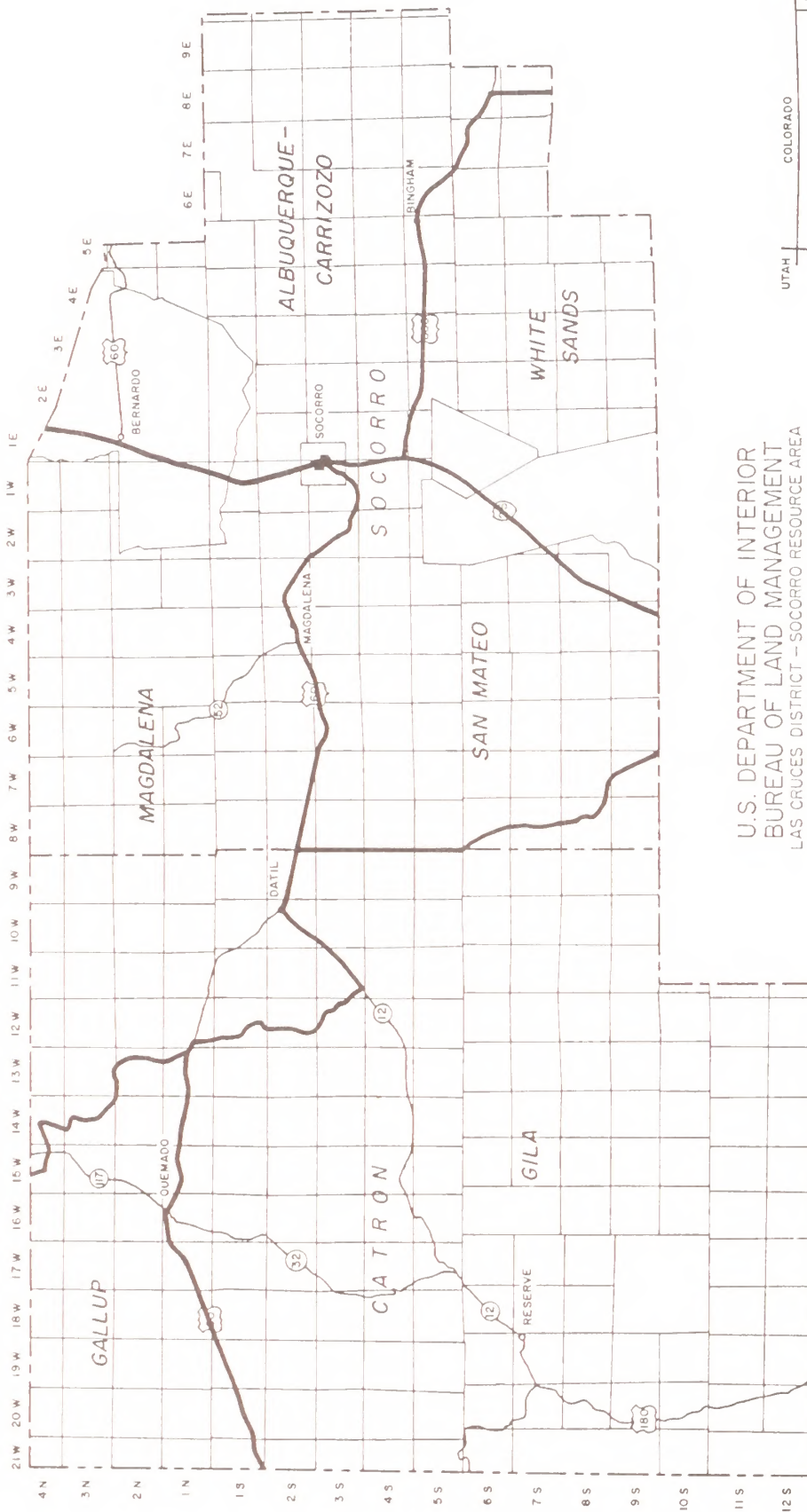
SHS	Mammals	Raptors	Game Birds	Water Fowl	Other Birds	Reptiles	Amphibians	Fish	Total No. of Species by SHS
Creosote Hill	24	14	2	0	22	29	7	0	98
Mixed Shrub Rolling Upland	38	13	2	0	29	28	7	1	118
Mixed Shrub Hill	29	12	2	0	35	28	8	0	114
Half-Shrub Hill	46	16	4	14	51	30	10	0	131
Mesquite Rolling Upland	21	13	4	0	36	25	9	0	108
Grass Rolling Upland	23	14	2	0	18	28	8	0	93
Arroyo-Riparian	39	18	5	0	95	44	8	0	209
Riparian	34	23	9	27	179	37	7	0	316
Lava	25	12	2	0	28	22	4	0	98
Conifer Mountain	75	26	5	16	131	47	14	18	332
Creosote Questa	31	12	2	0	32	21	6	0	104
Pinyon/Juniper Hill	75	27	4	14	130	50	5	0	355
Rabbitbrush/Gamma Hill	36	13	3	13	37	26	10	0	128
Sacaton/Thistle Valley	45	15	2	13	27	22	8	0	132
Saltbush/Grama Valley	47	17	2	13	36	29	9	0	153
Shrub Pediment	34	16	3	0	47	33	8	0	141
Mixed Shrub Hogback	29	12	2	0	35	28	7	0	114



Table 3-14  
STANDARD HABITAT SITES UTILIZED BY GAME SPECIES

SHS	Mule Deer	Pronghorn	Elk	Black Bear	Mountain Lion	Turkey	No. of Types of Game Species Using Each SHS
Creosote Hill	X	X			X		3
Mixed Shrub Rolling Upland	X	X					2
Mixed Shrub Hill	X	X			X		3
Half-Shrub Hill		X	X				2
Mesquite Rolling Upland	X	X				X	3
Grass Rolling Upland		[X]					1
Arroyo-riparian	X	X		X	X		5
Riparian	X	X		X	X		5
Lava	X	X			X		3
Conifer Mountain	X	X	[X]	[X]	[X]		6
Creosote Questa	X	X			X	X	4
Pinyon/Juniper Hill	[X]	X	X	X	X	[X]	7
Rabbitbrush/Grama Hill		X	X				2
Sacaton/Thistle Valley		X					1
Saltbush/Grama Valley		X					1
Shrub Pediment	X	X			X		3
Mixed Shrub Hogback	X	X			X		3

[x] Preferred habitat

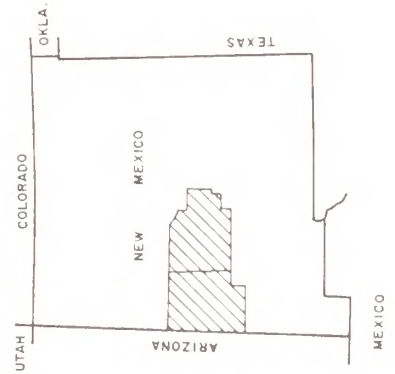


U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
MAP 3-12  
DEER HERD UNITS

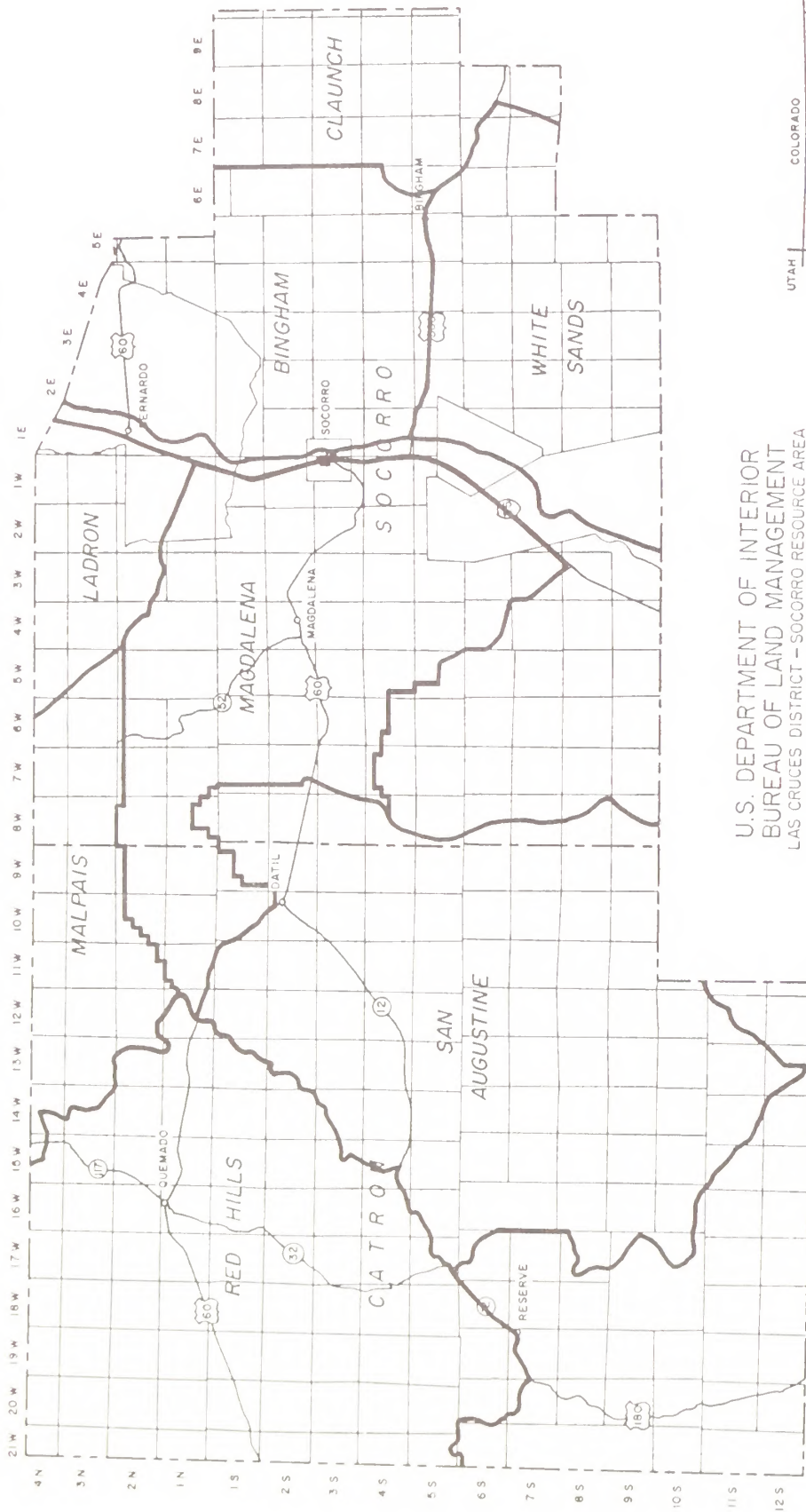


LEGEND

-  ROAD
-  HERD UNIT BOUNDARY





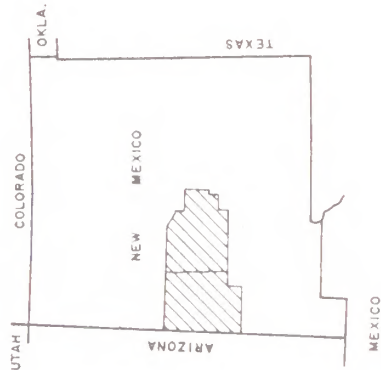


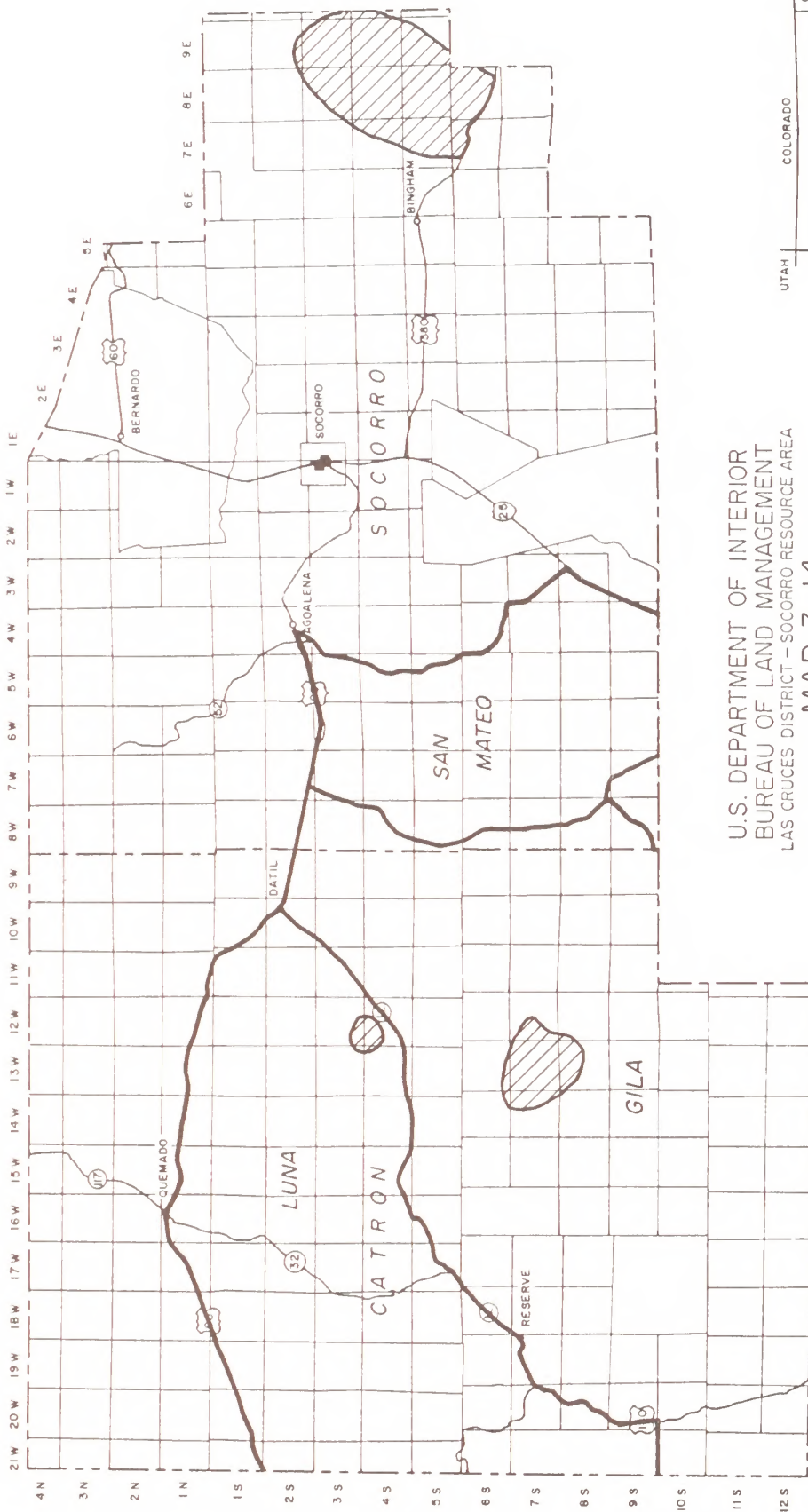
U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 3-13**  
PRONGHORN HERD UNITS



**LEGEND**

-  ROAD
-  HERD UNIT BOUNDARY



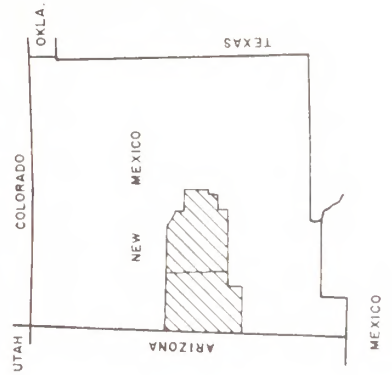


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LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
MAP 3-14  
ELK HERD UNITS



LEGEND

- ROAD
- HERD UNIT BOUNDARY
- YEARLONG USE AREA





The NMDG&F Comprehensive Plan estimates that elk numbers are increasing in all herd management units within the SRA; however, exact elk population figures are not known.

#### Mountain Lion, Black Bear and Turkey

Mountain lion, black bear, and turkey also occur in the SRA. Refer to Table 3-14 for the SHS's occupied by these species. Species unit maps have not been prepared for these animals due to their low population densities.

#### SMALL GAME

##### Upland Game Birds

Major species of upland game birds include Gambels quail, scaled quail, and mourning dove. Gambels quail occur in the more shrubland type habitat sites, whereas scaled quail frequent drier areas. Population numbers of both Gambels and scaled quail fluctuate, depending in part on precipitation and quality of habitat. Mourning dove occur throughout the SRA with concentrations favoring those areas where water is present.

##### Mammals

The Abert's squirrel occurs in the Conifer Mountain SHS, primarily in ponderosa pine vegetation type in the southwestern part of the SRA. Abert's squirrel are not very abundant in this area due to past forestry practices that thinned the timber, leaving few groups of ponderosa pine (USDI, BLM, URA 3, 1980).

#### WATERFOWL

Although a few species of waterfowl are yearlong residents within the SRA, the majority of the 27 waterfowl species listed in the MSA Appendix WL-1 are migratory. All available acceptable surface water within the SRA is used by migrating waterfowl, but concentrations are found primarily in the Rio Grande Valley.

#### NON-GAME

Many nongame species, which include small mammals (85 species), birds (242 species), amphibians (19 species) and reptiles (86

species) occur throughout the SRA. The MSA Appendix WL-1 gives a listing of wildlife species including nongame and the SHS's which they utilize.

#### RAPTORS

Raptors (hawks, falcons, eagles, and owls) occur throughout the SRA utilizing every SHS. Refer to Table 3-13 for a comparison of the number of different individual species of raptors utilizing each SHS.

In 1983, a raptor survey was initiated to verify raptor nesting activity and species in the San Augustine Coal Area (SACA); this survey is still on-going.

A raptor survey was conducted during the nesting season in 1985, 1986, and 1987 to verify raptor nesting activity and species for the SRA. The raptor nest survey information is available at the SRA in the IHICS computer program.

#### THREATENED OR ENDANGERED ANIMAL SPECIES

There is a potential for 21 Federal and State endangered animal species to occur on public lands within the SRA. These species are listed in Table 3-15 with their classification and recorded occurrences.

#### CRUCIAL WILDLIFE AREAS

##### Ladrones Mountain

Currently, there are no bighorn sheep present within the SRA. However, plans are being finalized to reintroduce bighorn sheep into the Ladron Mountain area by 1993 (Haussamen 1987). Habitat on Ladron Mountain is rated in good condition for bighorn sheep. Desert bighorn sheep are a New Mexico State endangered species.

##### Agua Fria Canyon

This area has a relatively high density of golden eagle nests in relation to other surrounding areas. There are generally three active golden eagle nests every year in this canyon. The rocky cliff face also provides nesting areas for other raptors, and water is

Table 3-15  
POTENTIAL AND CONFIRMED ENDANGERED ANIMAL SPECIES ON PUBLIC LANDS

Species Name	Status	Occurrence	Preferred Habitat Types	Comments
Black-Footed Ferret <u>Mustela nigripes</u>	FE & SE1	Unconfirmed	Prairie dog towns.	No present confirmed occurrences in New Mexico.
Whooping Crane <u>Grus americana</u>	FE & SE2	Unconfirmed	Rio Grande Valley.	Migratory species.
Bald Eagle <u>Haliaeetus leucocephalus</u>	FE & SE2	Confirmed	Large trees on cliffs near water-Rio Grande Valley.	Migratory species.
Peregrine Falcon <u>Falco peregrinus anatum</u>	FE & SE1	Confirmed	Large cliffs near water.	Migratory species.
Socorro Isopod <u>Exosphaeroma thermophilum</u>	FE & SE1	Unconfirmed	Warm springs.	Isolated species, occurs only on private land.
Olivaceous Cormorant <u>Phalacrocorax olivaceous</u>	SE2	Confirmed	Rio Grande Valley and Elephant Butte Reservoir.	Found near large bodies of water - fish eating bird.
Least Tern <u>Sterna albifroas athalassos</u>	SE2	Unconfirmed	Rio Grande Valley.	Vagrant species.
Mississippi Kite <u>Ictinia mississippiensis</u>	SE2	Unconfirmed	Tall trees in Rio Grande Valley.	Migratory species.



Table 3-15 (continued)  
POTENTIAL AND CONFIRMED ENDANGERED ANIMAL SPECIES ON PUBLIC LANDS

Species Name	Status	Occurrence	Preferred Habitat Types	Comments
Bell's Vireo <u>Vireo bellii</u>	SE2	Unconfirmed	Riparian mesquite/cotton wood/willow association.	Migratory species.
Baird's Sparrow <u>Ammodramus bairdii</u>	SE2	Confirmed	Grasslands.	Migratory species.
Common Black Hawk <u>Buteogallus anthracinus</u>	SE2	Confirmed	Rio Grande Valley cottonwood trees.	Only one isolated occurrence has been reported and it was on private land.
Black-tailed Prairie Dog <u>Cynomys ludovicianus</u>	SE2	Confirmed	Desert grasslands.	Possibly extirpated in Socorro County.
Meadow Jumping Mouse <u>Zapus hudsonius</u>	SE2	Unconfirmed	Marshy areas.	Occurs only in Bosque del Apache National Wildlife Refuge and private lands.
Sonoran Mountain Kingsnake <u>Lampropeltis pyromelana</u>	SE2	Unconfirmed	Montane Forests.	Known occurrences on Mogollon plateau.

FE - Federally Endangered SE1 - State Endangered, Group 1 SE2 - State Endangered, Group 2

Sources: 50 CFR 17 (October 1, 1985, as revised January 1, 1986)  
NMDG&F 1985 (1985 et seq.) Handbook of Species Endangered in New Mexico

available in the canyon. This area also has good scenic qualities.

#### Horse Mountain

Currently, the elk population on Horse Mountain is increasing and elk are using this area on a year-round basis. There has not been any authorized livestock use on the mountain for over two years. Browse utilization in May 1986 averaged 33 percent on the mountain.

These three areas should have special attention due to their critical wildlife values.

Also, in addition to the areas listed above four other areas which contain important wildlife values require special attention: Pelona Mountain, Chavez Draw, Walnut Canyon and San Lorenzo Canyon. These areas are described in Appendix L.

#### CULTURAL RESOURCES

##### CULTURAL SETTING AND SIGNIFICANCE OF THE RESOURCES

SRA corresponds closely to an important geographic area of prehistoric and historic culture change. Archeological evidence of past cultures is abundant, but not well documented, and the cultural groups, cultural changes through time, and relationships between major groups remain poorly understood. A primary focus of modern archeology is the analysis and explanation of culture change; and, a primary criterion for the managerial evaluation of the significance of archeological sites is the importance of the problems to which data contained in a site or region may be applied. Therefore, in a region of poorly understood cultural interaction and change, with a vast number of projected archeological remains with excellent data potential and, with questions to be addressed of human group dynamics of local, regional, and national significance, the research potential of sites within the SRA constitutes a scientific resource of major importance.

Evidence from the earliest known era of human occupation of the New World has been found in the SRA, beginning at least 10,000 years ago, with continuous occupation in some regions through the present. The SRA also contains regions of prehistoric abandonment which provide the opportunity for analysis in view of abandonments and population dynamics in other geographic and environmental regions of the southwest.

Archeological evidence for human occupation within the SRA begins with the Paleo-Indian Clovis hunters and continues through the Archaic, to the beginnings of agriculturally-based village cultures, and the evolution of complex societies brought into the present by the modern tribal groups. At least as early as the Archaic (5,000 B.C.), cultural traits such as dart points, which are thought to represent two different cultural groups: one centered to the north and the other to the south of the region, are observed to overlap in the archeological record here and, as a result, the region has long been considered an archeological "frontier." The two Archaic traditions, the Cochise to the south and the Oshara to the north, are thought to have evolved into the sedentary agricultural societies of the same general geographic regions, the Mogollon and Anasazi. The culture traits of these societies have also long been known to overlap in the region. The question of overlapping cultures has been most studied in the western portion of the SRA, where the core-area Mogollon meets Cibola Anasazi, but occurs throughout the central and eastern portions as well, where Jornada Mogollon meets ancestral Piro and Tompiro. The questions of culture change and cultural interaction are poorly understood; first, because the region has only recently been the subject of renewed interest and intensive investigation, and second, because questions posed to the archeological record are framed in models based on many of the concepts outlined immediately above. In short, the region, until recently, has most often been viewed as something of a prehistoric population vacuum, filled by incursions of settlement by one or the other archeological cultures (defining culture as a collection of co-occurring traits). Research based on these premises tends to lean to



counting cultural traits of each outside "culture" observed in the region to determine who migrated in, and who was influenced by whom. Future studies of the largely untapped data base will almost certainly lead to redefinition of these models. For example, certain portions of Archaic tool kits thought to represent one or the other "culture" will probably be found to be functional (that is, designed to do a job, rather than represent cultural affiliation). And, although there is a paucity of Basketmaker II material north of Highway 60 in western Catron County, the data base presently can document the full range of developmental pueblo occupation, suggesting a revision of the conventional view of colonization from either the north or the south. The paucity of early Basketmaker material in this subregion is particularly interesting, if the notion can be tested that an indigenous "Archaic" population persisted in the highlands, essentially "skipping" the developmental Basketmaker period and adapting to a dependence upon agriculture in late Basketmaker or early Pueblo eras. Questions such as these can be posed to the archeological record of Catron and Socorro Counties to help clarify the poorly understood archeology of the region. Because of the complex evidence of culture change that has occurred here, questions can also span the full array of anthropological investigation, from the documentation of temporal culture history to problems of far more general cultural dynamics.

Although the importance of archeological resources in SRA is fairly well known, our present knowledge and models of the cultural systems represented by the archeological record are based on an extraordinarily small sample of the landscape. Figures are not available for lands of other ownership, but BLM lands may be on the high end of the scale for lands surveyed. Of the 1.5 million surface acres managed by the BLM, a generous estimate is that approximately 12,000 acres have been archeologically surveyed as a cumulative total of small surveys over many years. If the records are scrutinized for reliability of survey and recording methods, this estimate could drop nearly by half. Therefore, the sample of BLM lands in SRA is approximately eight-tenths of one percent.

This is in contrast to some regions of New Mexico, where project-related surveys have raised coverage to as high as 6 percent. At these higher levels, the non-randomness of the projects for which surveys are conducted may have less influence upon the fraction of the archeological population observed. In the SRA, except for data recovered from three Class II surveys which were designed to sample the archeological population within bounded landscapes (two of which were conducted without provision for data analysis and report preparation), the remaining surveyed areas constitute such a tiny fraction of the total SRA surface that there can be little confidence that the known sites recorded to date are, in any way, representative of the archeological population in the field. This is important, since a primary cultural resource goal of the BLM is to preserve and protect a representative sample of the full array of resources present on BLM lands. In the BLM management process, decisions must be made to allocate the use of specific cultural resources in conformance with this goal and the Section 106 (National Historic Preservation Act) process. In the absence of a sound basis for comparison, cultural resources must be managed conservatively. Those BLM use-categories (see Appendix H), which commit resources without provision for data recovery, should be employed very rarely, and then only for specific, well-justified purposes.

#### SUMMARY OF THE SITE INVENTORY

A total of 2,918 archeological sites are presently recorded on lands of all ownership in Catron and Socorro Counties. Of these, 787 lie on surface lands managed by the BLM. No figures are available to determine the total acreage surveyed on lands of other ownership; and, because of the non-randomness of projects that have prompted surveys on BLM lands, there is no valid quantitative method to extrapolate the total number of sites which may be present on BLM lands. Subjective estimates of 20,000 to 30,000 sites have been made, however.

Archeological sites often represent a place of repeated use by humans during different time periods; when these can be identified, they are recorded as separate temporal components. Table 3-16 represents 3,407 temporal

components within the 2,918 sites recorded on all lands, and Table 3-17 represents 972 components within the 787 sites recorded on BLM land. Because of the difficulties in defining Mogollon vs. Anasazi sites, two sets of data are presented for each case, one which lumps Mogollon and Anasazi under "Pueblo," and one which separates the two classes according to the recorders' interpretation.

TABLE 3-16  
ALL SITES IN CATRON AND SOCORRO COUNTIES

Culture	Freq.	Cum. Freq.	Per cent	Cum. percent
Mogollon and Anasazi = Pueblo				
Paleo	12	12	0.352	0.352
Archaic	235	247	6.898	7.250
Pueblo	1640	1887	48.136	55.386
Navajo	44	1931	1.291	56.677
Historic	275	2206	8.072	64.749
Unknown	1201	3407	35.251	100.000

Mogollon and Anasazi Indicated

Paleo	12	12	0.352	0.352
Archaic	235	247	6.898	7.250
Anasazi	1034	1281	30.349	37.599
Mogollon	606	1887	17.787	55.386
Navajo	44	1931	1.291	56.677
Historic	275	2206	8.072	64.749
Unknown	1201	3407	35.251	100.000

TABLE 3-17  
BLM SITES IN CATRON AND SOCORRO COUNTIES

Culture	Freq.	Cum. Freq.	Per cent	Cum. percent
Mogollon and Anasazi = Pueblo				
Paleo	5	5	0.514	0.514
Archaic	144	149	14.815	15.329
Pueblo	383	532	39.403	54.733
Navajo	7	539	0.720	55.453
Historic	84	623	8.642	64.095
Unknown	349	972	35.905	100.000

Mogollon and Anasazi Indicated

Paleo	5	5	0.514	0.514
Archaic	144	149	14.815	15.329
Anasazi	355	504	36.523	51.852
Mogollon	28	532	2.881	54.733
Navajo	7	539	0.720	55.453
Historic	84	623	8.642	64.095
Unknown	349	972	35.905	100.000

## SOCIO-CULTURAL RESOURCES

Most socio-cultural resources are related to traditional Indian religious beliefs identified for consideration under the American Indian Religious Freedom Act (AIRFA). But, in a broader sense under the National Environmental Policy Act (NEPA), effects upon other traditional American lifeways should be considered as well. For example, in New Mexico, many villages of Spanish descent remain which continue long-standing cultural and religious traditions which could be affected by Federal undertakings; eg. the transfer of shrine locations into individual private ownership. The EIS process directs that such effects should be taken into account. AIRFA directs Federal agencies to evaluate their policies and procedures with the aim of protecting Indian religious freedom. In the SRA, effects upon these, and other, perhaps more subtle aspects of traditional American cultures, could occur and should be considered.

One Indian reservation, home of the Alamo Navajo Band, lies within the SRA and many more border it, or have some potential historical ties with the region. All of these tribes have been contacted for this RMP and previously for general and specific consultations for archeological work under 43 (Code of Federal Regulations) CFR 7. The Pueblos of Zuni, Acoma, and Isleta have responded positively for continued consultation under 43 CFR 7. Although neither the Alamo nor Ramah Navajo bands have expressed interest, sites of importance to the Navajo Tribe were identified in Catron County during the 1950s land claims hearings and these may retain significance to more distant tribal members. As suggested in the discussion of archeological resources, the people of Zuni and Acoma have strong ties to the areas south of their respective reservations and some highly significant locations such as Zuni Salt Lake and the associated Salt Trails lying within the SRA. There is reason to believe that many more locations of traditional religious significance, unknown to non-Indians, are present in the SRA. To avoid inadvertent effects upon such sites, it is important that



a better dialogue be opened to assess the effects of actions beyond those associated with archeological excavations under 43 CFR 7. This is particularly true for actions concerning land transfers from Federal ownership, since free practice of traditional religious activities could be excluded under other ownership.

Other aspects of traditional American culture and cultural practices could be affected by BLM actions. For example, descendents of the Spanish community of Riley (formerly Santa Rita) actively maintain the historic Riley church and other portions of the abandoned town and return as a community annually in May for a religious fiesta. Even though the descendents are scattered throughout the region, many of the traditions are retained and socio-religious roles are assigned and carried out as they were in the past when the community was occupied. The BLM presently manages some portions of land within the abandoned town, and before any actions which would affect ownership or the character of the area are authorized, effects upon the continuing traditional lifeway of the descendents of Santa Rita should be considered.

One area of critical environmental concern (ACEC) is presently managed primarily for its cultural values. This is "Tinajas" ACEC, which surrounds the Arroyo del Tajo pictograph site. The management of this site under its current activity plan is consistent with the objectives of this RMP. Cultural Resource Management Plans (CRMPs) are in effect for three additional sites, Bat Cave, Fort Craig, and Teypama, and these are also consistent with the objectives of the RMP.

#### PALEONTOLOGY

A wide variety of paleontological resources can be expected to be found in the SRA. Fossil lifeforms of plants and both invertebrate and vertebrate animals of marine and terrestrial settings may potentially be found wherever the appropriate sedimentary rocks are exposed. But, although the Socorro region has been the subject of professional and student investigations for many years (notably because of the presence in Socorro of

the New Mexico Institute of Mining and Technology (NMIMT)), no overview of paleontology for the region has ever been prepared. Research conducted to date has been specific to researcher interest or particular problems of the fossil record (Wolberg 1987). The long-term management of paleontological resources in the SRA would benefit from the development of a synthesis of existing literature, parallel to a Class I Inventory of the Cultural Resource Program.

The SRA comprises a geologically complex region with outcrops of sedimentary rocks ranging in age from Precambrian to Quaternary, and unconsolidated deposits of Pleistocene age, which have yielded fossils of mammoth and other Pleistocene fauna. Cretaceous marine and terrestrial fossils have been found in the Carthage area, petrified wood of Triassic origin in northwestern Catron County, and Permian amphibians have been described from the Abo formation along the east side of the Rio Grande. The recommended overview of paleontology for the SRA should include an evaluation of the significance of these and other recorded localities.

The primary actions undertaken by the BLM which may affect significant paleontological resources involve mining and the issuance of permits for scientific and commercial use. In SRA, the forms of mining which are most likely to affect fossil bearing rocks and sediments are coal mining and gravel quarrying. Scientific use has been historically minimal and, where it has occurred, it has been non-disturbing, with no major excavations undertaken in the SRA. No applications for commercial use of fossil materials have been received in several years. Unauthorized collecting is known to occur, but this is not believed to be at a commercial scale and the impact, although difficult to evaluate, is probably minimal.

#### RECREATION/OFF-ROAD VEHICLES

The SRA provides recreational opportunities for the Albuquerque metropolitan area and Socorro and Catron County residents. The majority of the public land in the SRA is located within two to three hours from

Albuquerque and one to two hours from Socorro. Population projections for the next twenty years forecast significant growth increases for the Albuquerque metropolitan area. The proximity of Albuquerque and Socorro to the SRA will result in increased demand for the recreation opportunities provided by the SRA during the life of this plan. Increased pressure on natural and cultural resources and access to public lands are also anticipated due to increased recreational use.

The majority of recreation use in the SRA is dispersed in nature. A wide variety of recreation activities are practiced in the SRA; i.e., hunting, camping, picnicking, backpacking, horseback riding, climbing, caving, hang gliding, motorcycling, four wheel driving, nature observing, rockhounding and photography. A higher concentration of these uses occurs in several of the areas proposed as SMAs (see Appendix L for a description of these SMAs and maps).

With the exception of the Datil Well Campground, the recreational opportunities available in the SRA are predominantly undeveloped in nature, and are in a low elevation semiarid landscape. Although recreation opportunities in the SRA are similar to those provided by other land management agencies, the character of the landscape in the SRA is a different type of setting which provides an expanded range of recreation opportunities. The SRA is diverse with high elevation forested areas to the west and low elevation semiarid regions to the east. The lower elevation of many portions of the SRA permits the continuation of certain types of recreation opportunities precluded in mountainous areas by seasonal climatic changes.

The New Mexico Statewide Comprehensive Outdoor Recreation Plan (SCORP), 1986, reveals a need for more primitive recreation opportunities statewide and states: "Federal providers are encouraged to continue to study areas which could be included in the wilderness system" (p. 66). The SCORP also identifies the "need for the development of additional trails, the renovation of some existing trails, and the provision of well-marked identified

trailheads. There is a further need for a linkage between existing trails and adequate public information about the location and condition of all trails. Access to hiking trails from communities is encouraged where feasible" (p. 67). The SCORP also identifies the need for "more campgrounds closer to urban areas and for better public information about the campground" (p. 68). Some of the specific recreation needs identified in the SCORP for the SRA include campgrounds, walking, hiking, and equestrian trails, and urban-related recreational opportunities. Some popular recreation activities identified by users in the SRA include picnicking, pleasure walking, hiking, sightseeing/photography, backpacking, big and small game hunting, horseback riding, rockhounding, rockclimbing, and trail biking/four wheeling.

The SRA has the potential to provide numerous interpretive services for public land users. However, to date, interpretive services have been confined to a limited signing program, brochures, and annual, school-related programs.

The following areas of local and national significance for recreation are located in the SRA: The Horse Mountain Outstanding Natural Area (ONA), a portion of the Continental Divide National Scenic Trail, Fort Craig National Historic Site, Tinajas ACEC, Datil Well Campground, and 12 WSAs. Additional areas are described in more detail in Appendix L.

The Recreation Opportunity Spectrum (ROS) (see Appendix I) inventory only exists for the SACA. This is a data gap identified under needs for continuing management in this RMP/EIS. Within the next five years, an ROS inventory should be funded and completed for the SRA to enhance management of dispersed recreation opportunities.

Off-road vehicle (ORV) use within the SRA is light and dispersed. The majority of use occurs during the months of October and November, in conjunction with hunting season. Competitive events occur every year or two, but use is not significant. These events are processed through the permitting process described in the 43 CFR 8372.0-5. Presently,



the entire SRA has been designated as either open, limited, or closed to ORV use (see Glossary for definitions of ORV open, limited, closed). The acreage in the SRA for each ORV designation is shown in Table 3-18. See Appendix I for a description of these ORV designations and Chapter 2, Map 2-3 for the location of these existing designations.

TABLE 3-18  
Existing ORV Designated Acreages

Designation	Acreage (AC)
Open	554,069
Limited	1,127,661
Closed	-0-

#### VISUAL RESOURCES

Visual management objectives have been determined for all public lands in the SRA. An inventory has been conducted utilizing current BLM manual procedures (east half of the SRA only) and has been documented in the MSA. Four management objectives have been established within the SRA, one for each visual resource management (VRM) class. The acreage in the SRA for each class is: I - 19,334 acres; II - 628,877 acres, III - 596,593 acres; IV - 3,229,106 acres. See Appendix J for a description of the management objectives for each of the four VRM classes and a Map depicting the class areas.

Class ratings are based on scenic quality, visual sensitivity, and distance zone criteria. It is important to note the BLM manages only the public land visual resources.

#### WILDERNESS

Wilderness resources in the SRA have been inventoried using the BLM Wilderness Inventory Handbook (USDI, BLM 1978) and are currently being managed under the Interim Management and Policy Guidelines for Lands Under Wilderness Review (USDI, BLM 1983). This management emphasis will continue until Congress decides which lands are suitable or unsuitable for wilderness designation. Designated wilderness would be managed under the Wilderness Management Policy (USDI, BLM 1981).

The SRA manages 12 WSAs (Map 3-15) totalling 296,198 acres. Current recommendations for wilderness designations are shown in Table 3-19 and Map 3-15.

TABLE 3-19  
SOCORRO RESOURCE AREA  
WILDERNESS RECOMMENDATIONS

WSA	Total BLM Acres	*WAR Recommendations 1986	
		Suitable	Nonsuitable
Antelope	20,710	0	20,710
Continental Divide	68,761	37,599	31,162
Devil's Backbone	8,904	0	8,904
Eagle Peak	43,960	0	43,960
Horse Mountain	5,032	4,432	600
Jornada del Muerto	31,147	31,147	0
Mesita Blanca	19,414	0	19,414
Presilla	8,680	0	8,680
Sierra de las Canas	12,838	12,798	40
Sierra Ladrones	45,308	31,804	13,504
Stallion	24,238	0	24,238
Veranito	7,206	0	7,206

\* 42 percent of Total WSA Acreage Recommended as Preliminary Suitable in Wilderness Analysis Reports (WAR)

#### SOCIAL AND ECONOMIC CONDITIONS

##### ZONE OF INFLUENCE

For purposes of analyzing social and economic consequences on a regional basis, all

consequences were given resource area-wide consideration. Some of the consequences are also further discussed on a local basis.

#### POPULATION

The area's population was at 16,303 in 1940, but decreased each decade to a low of 11,961 in 1970 (a decrease of nearly 27 percent). During this same period the State population showed consistent growth from 531,818 to 1,017,055 (91 percent). The decade of the 70's brought a change in the SRA. The population increased by nearly 27.8 percent or just slightly less than the 28.1 percent growth rate for New Mexico for the same period. The 1980 SRA population was approximately 57.1 percent urban. This compares to 72.1 percent urban for the State. Probably more important to the use of many of the resources of the SRA is its proximity to Albuquerque (and Bernalillo County) where approximately one-third of the State's people live. This large concentration of people draws heavily on surrounding areas for recreational and other resources. Certainly the SRA is within the use area.

The SRA had a population of 15,286 in 1980. The SRA population was growing at a rate near the growth rate for the State for the decade 1970 to 1980. As a point of further comparison Catron and Socorro Counties were 13 and 11, respectively, when the counties of the State were ranked relative to the percentage change in population between 1970 and 1980 (See Table 3-20). The largest communities in the SRA are Socorro (1980 population 7,173), Magdalena (1980 population 1,022), and Reserve (1980 population 439). The population density for the SRA in 1980 was 1.9 persons per square mile. This is considerably below the Statewide population density of 10.7 persons per square mile in 1980. The 1980 SRA population was 47.3 percent non-Hispanic white, 43.5 percent Hispanic and 8.4 percent American Indian with less than 1 percent other groups. The principal American Indian group is the Alamo Navajo group near Magdalena (New Mexico Statistical Abstract 1984).

TABLE 3-20  
Population Change, by County and  
Resource Area 1970 to 1980

	County		SRA 1/ Total	State Total
	Catron	Socorro		
Population:				
1980	2,720	12,566	15,286	1,303,143
1970	2,198	9,763	11,961	1,017,055
Change: No.	522	2,803	3,325	286,088
%	23.7	28.7	27.8	28.1

1/ Calculated

Source: New Mexico Statistical Abstract 1984

#### HOUSING

The number of total housing units in the SRA increased during the 1970's by 45 percent to 5,791 units in 1980. Seventy-five percent of the year-round units were occupied in 1980 (See Table 3-21).

TABLE 3-21  
Housing Change, by County and  
Resource Area 1970 to 1980

	County		SRA Total	State Total
	Catron	Socorro		
Total Housing				
Units:				
1980 1/	1,209	4,582	5,791	493,292
1970 2/	961	3,026	3,987	321,898
Change: No.	248	1,556	1,804	171,394
%	25.8	51.4	45.2	53.2

1/ Census HC80-1-A33 NM, Table 1

2/ Census HC(1)-A33 NM, Table 29

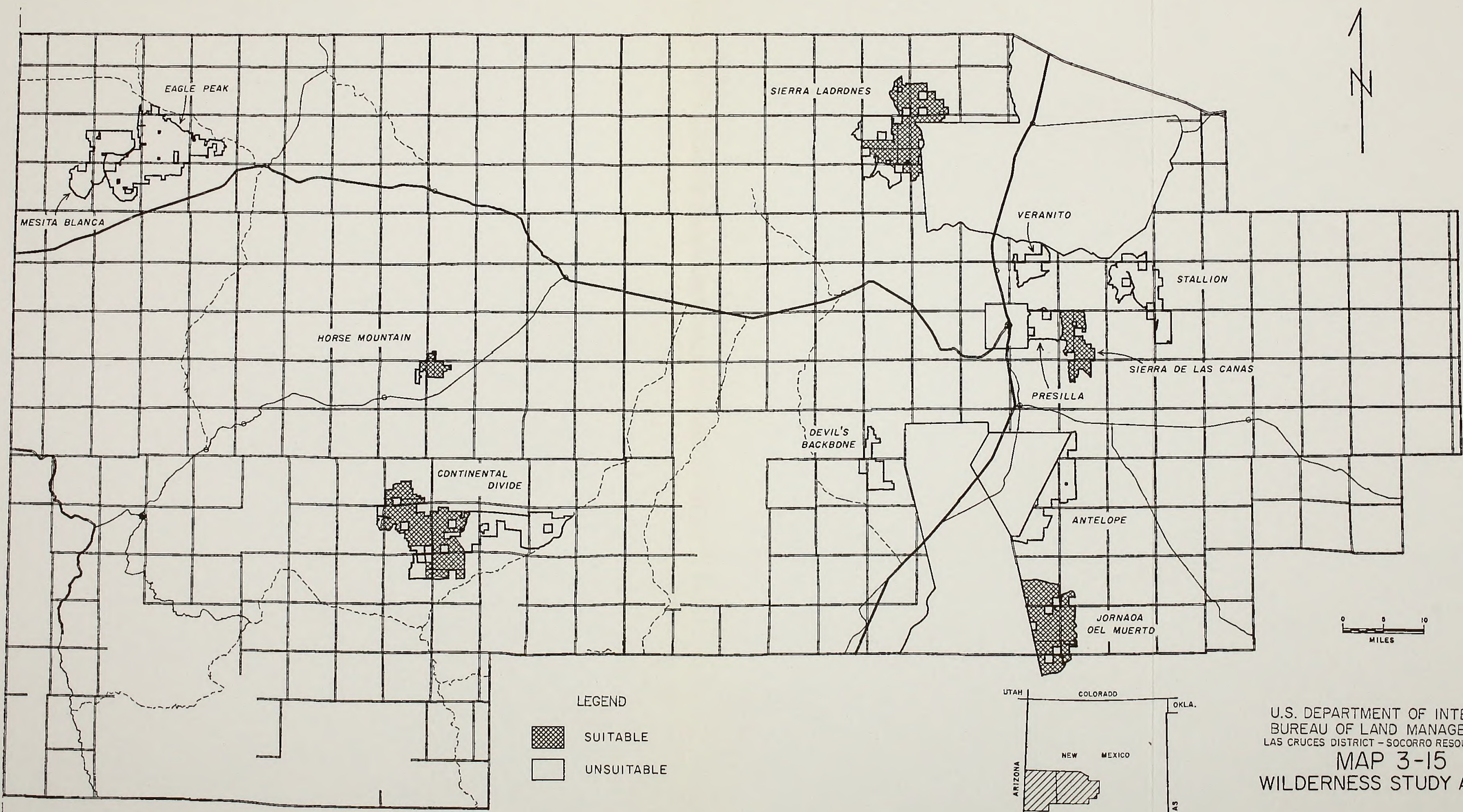
#### EMPLOYMENT

The percent change in total employment 1970-80 can be calculated from figures in Table 3-22 as can the change by county and industry. The two-county percent change in employment (53.6 percent) was slightly lower than the State's percent change (57.4 percent). The 1980 SRA agricultural (including forestry and fisheries) employment is 11.7 percent compared to 3.7 percent for the State's agricultural employment. The public administration sector employment for the SRA was 12.0 percent compared to 8.5 percent for the State. These two sectors are where the greatest differences





R21W R20W R19W R18W R17W R16W R15W R14W R13W R12W R11W R10W R9W R8W R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E R9E R10E

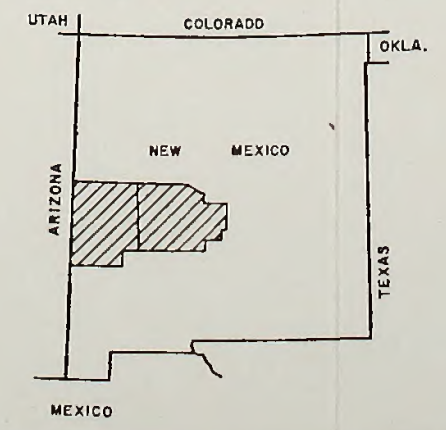
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LEGEND

 SUITABLE

 UNSUITABLE



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP 3-15**  
WILDERNESS STUDY AREAS







occurred in job distribution between the SRA and the State. The 1985 civilian labor force for the SRA was 6,252. The unemployment rate was 9.6 percent. This civilian labor force was 21.7 percent higher than it had been in 1980; but the number of unemployed increased, thus raising the unemployment rate from 6.9 percent in 1980 to 9.6 percent in 1985 (Bureau of Census 1970, 1980).

TABLE 3-22  
Employment Change, by County and  
Resource Area 1970 to 1980

Employment Sector	County		SRA Total	New Mexico Total
	Catron	Socorro		
Agriculture *				
Jobs 1980	290	341	631	18,817
1970	196	178	374	15,352
Change: No.	94	163	257	3,465
%	48.0	91.6	68.7	18.4
Mining				
Jobs 1980	10	83	93	28,697
1970	0	42	42	17,943
Change: No.	10	41	51	10,754
%	0	97.6	121.4	59.9
Construction				
Jobs 1980	109	410	519	42,769
1970	69	221	290	23,774
Change: No.	40	189	229	18,995
%	58.0	85.5	79.0	79.9
Manufacturing				
Jobs 1980	129	146	275	37,737
1970	57	237	294	21,832
Change: No.	72	-91	-19	15,905
%	126.3	38.4	6.5	72.9
Transportation				
Jobs 1980	29	287	316	37,362
1970	30	278	308	21,819
Change: No.	-1	9	8	15,543
%	-3.3	3.2	2.6	71.2
Wholesale Trade				
Jobs 1980	4	49	53	17,024
1970	23	36	59	10,392
Change: No.	-19	13	6	6,632
%	-82.6	36.1	10.2	63.8

TABLE 3-22 (continued)  
Employment Change, by County and  
Resource Area 1970 to 1980

Employment Sector	County		SRA Total	New Mexico Total
	Catron	Socorro		
Retail Trade				
Jobs 1980	102	714	816	88,529
1970	97	416	513	57,484
Change: No.	5	298	303	31,045
%	5.2	71.6	59.1	54.0
Finance, Insurance and Real Estate				
Jobs 1980	13	108	121	26,445
1970	0	54	54	13,398
Change: No.	13	54	67	13,047
%	0	100.0	124.1	97.4
Services				
Jobs 1980	149	1,775	1,924	167,828
1970	135	1,024	1,159	112,118
Change: No.	14	751	765	55,710
%	10.4	73.3	66.0	49.7
Public Administration				
Jobs 1980	58	589	647	43,030
1970	94	326	420	28,725
Change: No.	36	263	227	14,305
%	1.1	80.7	54.0	49.8
Total				
Jobs 1980	893	4,502	5,395	508,238
1970	701	2,812	3,513	322,837
Change: No.	192	1,690	1,882	185,401
%	27.4	60.1	53.6	57.4

\* Agriculture includes Forestry and Fisheries

#### INCOME

The decade of the 1970's saw a per capita income increase for the SRA of approximately \$2,577, a 133.5 percent increase (See Table 3-23). The two counties were considerably different in their rate of per capita income change with Catron County's change being 79.7 percent compared to Socorro County's 151.6 percent. These figures compare to the Statewide rate of change of 149.9 percent. While it is important to note the rate of

change when considering an environment that may be impacted, it is also important to note that Catron County's per capita income in dollars (\$4,695 in 1979) is higher than Socorro County's per capita income (\$4,469 in 1979). The SRA per capita income reported in 1980 was 26.3 percent lower than the Statewide per capita income reported for the same period.

TABLE 3-23  
Per Capita Income Change, By County  
and Resource Area, 1970 to 1980

	County		SRA	New Mexico
	Catron	Socorro	Total	Total
Per Capita Income				
1980 *	4,695	4,469	4,507	6,119
1980 *	2,613	1,776	1,930	2,449
Change: No.	2,082	2,693	2,577	3,670
%	79.7	151.6	133.5	149.9

\* Figures for 1970 are actual income figures for 1969 and figures reported for 1980 are actual income for 1979.

Source: Census PC(1)-C33 NM, Tables 57 and 124  
Census PC80-1-C33 NM, Tables 103 and 180

## ECONOMIC RELATIONSHIPS

### Vegetative Use

There are 273 grazing allotments in the SRA. Categorization of allotments has been completed for all allotments including the 12 which are found in the Chupadera Mesa area. These 12 allotments are operated by 8 permittees and/or lessees.

The New Mexico Agricultural Statistics (1985) reports beef cattle on farms for January 1, 1985 at 555,000 for New Mexico; 42,000 (7.6%) of these beef cattle were reported to be in the SRA. The cash receipts for cattle and calves in 1985 for New Mexico were reported at \$525,787,000. The SRA part of the receipts was \$27,813,000, or 5.3 percent of the State total.

The eight operators are estimated to run approximately 4,226 animal units (AUs) of cattle. Figures based on a 1982 ranch cost and return study (Gray et al. 1983) indicate that these ranches would have receipts of approximately \$884,700 (in 1982 dollars) with costs of \$707,700. The net return to the operators for their labor, management, and investment based on 1982 study figures would be approximately \$177,000. This figure is approximately 4 percent of the personal farm income for the SRA and the farm income (\$4,398,000) is approximately 4 percent of total personal income for the SRA in 1982 (Bureau of Economic Analysis 1986).

### Off Road Vehicle Designation

ORV purchase and operation contribute to the local economy. The magnitude of this contribution is not presently available due to the lack of actual dollar figures.

Areas that have special uses in the SRA contribute economically as they draw special attention. Their use results in expenditures of funds for vehicles, equipment, living expenses or other costs. Specific dollar values have not been determined. However, it seems certain that as these areas are given special management attention, some additional level of economic activity could be created. Cultural and social values are being threatened by the lack of special management in some areas; and although they have not been quantified, they are none-the-less real.

### Social Setting

The area has a long history of habitation by Native Americans, Hispanics, and non-Hispanic whites. Each group has distinctly different cultural values which has created a diverse social setting.

### Attitudes

Attitudes expressed by groups and individuals who have become involved in BLM's planning process are about as diverse as the social values they represent. Most of the attitudes



expressed by existing users were in favor of a continuation of the current use. All issues had both support and opposition.

The attitudes of the local population toward land ownership adjustments are not fully known. However, there seems to be general support for maintaining a land base for general public use. There is concern on the part of landowners whose lands are adjacent to tracts that might be sold, especially if they have used the public land along with their own.

In general, livestock use is viewed as appropriate for public land. Grazing permittees tend to favor continuation of the status quo in grazing management. In addition, many permittees would like less regulation of their use of public land. Others feel that the BLM should more closely monitor the condition of public rangelands and that more forage should be allocated for wildlife use and conservation purposes.

ORV designation was supported on the one hand in the interest that more area would be provided for recreational ORV use and that some areas would be provided for use in ORV special events. ORV designations were

regarded as favorable as it supports other resource uses such as livestock management. ORV designations were opposed when they would restrict recreation ORV use from areas presently used and readily accessible. ORV designations were opposed if they opened areas where ORV use would conflict with grazing or where there has been misuse.

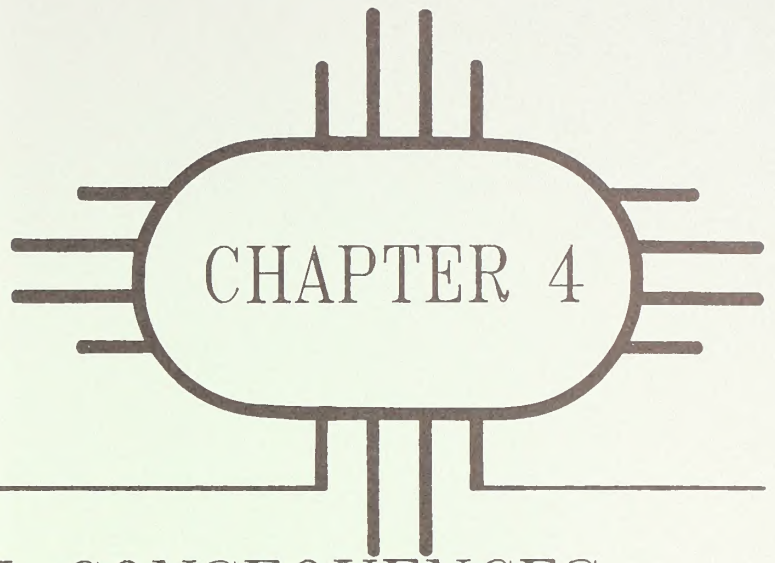
SMAs generally were supported for the protection they provide for cultural resources, the recreational opportunities developed or maintained, or the other resources they preserve. Concern was expressed that SMAs may restrict present uses.

Continued wild horse management is supported for its uniqueness, but is opposed for its conflict with other forage uses.

Local attitudes toward coal leasing seem generally favorable probably because of the expected employment and economic growth potential. There are resource conflicts which result in conflicting views as some residents fear the loss of other resources. Persons not immediately in the area express concerns that mining could destroy other significant resources.







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# ENVIRONMENTAL CONSEQUENCES

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## INTRODUCTION

This chapter analyzes the impacts which would result from implementing any of the four alternative Resource Management Plans (RMP). The alternatives under consideration are Alternative A, in which there would be no change from the present management; Alternative B, which would protect important environmental values and sensitive resources, while allowing development to occur; Alternative C, which would provide management to enhance nonconsumptive resource values; and Alternative D, which would emphasize the production and economic development of resources from public lands. Alternative B, the balanced alternative, has been identified as the preferred alternative.

This chapter also analyzes the cumulative impacts resulting from Continuing Management Guidance and Actions which are common to all alternatives, as they are likely to occur no matter which alternative is ultimately selected. This chapter further analyzes the anticipated impacts of the seven issues and two management concerns as they relate to each of the four alternatives.

Following selection of an RMP, activity plans with environmental analyses will be developed to implement the RMP and to provide specific guidance for management of affected areas. Specific land-use decisions, however, will be made for areas to be designated as Areas of Critical Environmental Concern (ACEC) and for Off-Road Vehicle (ORV) designations. The emphasis of this chapter is the general resource allocation issues, rather than site-specific impacts.

The "long term" for purposes of the analysis in this document is 20 years and the "short term" is 5 years. The following elements of the environment were analyzed but are not addressed since no impacts were identified: access, climate, topography, fire, prime or unique farmlands, floodplains, hazardous waste, wetlands, and wild and scenic rivers. In addition, no analysis will be carried forward on the wilderness program since that program will be addressed in a separate environmental impact statement (EIS).

The principal impact of the coal leasing suitability assessment determination would be on the Federal acres available for leasing. A recommendation of lands suitable for further consideration for coal leasing does not commit the Bureau of Land Management (BLM) to mining coal. That commitment would result from leasing, which cannot occur until after the preparation of a site-specific environmental analysis is done in conjunction with activity planning.

The analysis of unavoidable adverse impacts, short-term versus long-term productivity, and irreversible and irretrievable impacts is discussed, by alternative, in the impact analysis for each resource rather than under a separate heading. If irreversible and irretrievable impacts or short versus long-term productivity are not discussed in a given section, there are none.

## CONTINUING MANAGEMENT GUIDANCE AND ACTIONS

This section analyzes surface disturbing activities by resource (see Table 4-1).

### **MINERALS**

Routine decisions associated with continued management actions generally facilitate, or would have only minor negative impacts on, the development of mineral resources since all discretionary actions will be executed in conformance with the BLM's Mineral Resources Policy (Appendix B). The BLM's Mineral Resources Policy encourages the exploration and development of mineral resources with due consideration of environmental protection. Many of the discretionary actions under continued management involve the construction of range, watershed or wildlife improvements which may be replaced or otherwise mitigated by mineral developers with relatively little effort. The continuing management actions which have potentially significant impacts are primarily major rights-of-way, withdrawals petitioned for by non-BLM agencies, land-use authorizations and recreation and public purposes (R&PP) patents. Major demand-related actions which fall into these categories cannot be accurately projected and generally require additional planning and environmental

consideration on a case-by-case basis. The impacts and affected environment sections of the existing oil and gas and geothermal environmental assessment (EA) (No. NM-020-82-9) completed in 1982 and on file at the Socorro Resource Area (SRA) office, Socorro, NM, will continue to be used as reference and guidance in all future oil and gas or geothermal leasing cases.

Table 4-1

Estimated Acre Averages per Year of Surface Disturbing Activities for a 20-Year Period

Type of Action	Average Affected Acres per year
Seismic Lines	10 to 100
Oil & Gas Exploration Wells	3 to 15
Oil & Gas Access Roads	10 to 30
Geothermal Exploration Wells	2 to 5
Geothermal Access Roads	10
Coal Exploration Licenses	15 to 30
Sand and Gravel	8 to 30
Fencing	3
Pipelines	25
Reservoirs	6
Wells	1
Pushing/Root Plowing )	
Chemical Vegetative Treatments )	
Prescribed Burning )	3,000
Pitting/Furrowing )	
Seeding/Interseeding )	
Leases-Section 302, FLPMA	5
Permits-Section 302, FLPMA	5
R&PP Permits	10
Linear Rights-of-Way	10
Site Rights-of-Way	5
Vegetative Products Removal	640 to 650
Detention Dams	9
Diversions	6
Water Spreaders	60
Wire Checks	15
Wildfires	230
Cultural Site Enclosures	40
New Vehicle Trails	15
Off-Road Vehicle	40
Spring Developments	2
Umbrella Gamewaters	2
Enclosures	480

## RANGELAND

Actions associated with the East Socorro Grazing Environmental Statement (ES) and the West Socorro Rangeland Management Program EIS will continue to be carried out; i.e., allotment management plans (AMP) and grazing systems. Rangeland improvements and vegetative land treatments will also continue to be developed to improve or maintain forage production and ecological condition.

Since the completion of the East Socorro ES in 1979 and the West Socorro EIS in 1982, 80 miles of fence, 125 miles of pipeline, 3,100 acres of vegetative land treatment (chemical), 12 wells and 8 storage tanks have been completed. These figures do not include rangeland improvements authorized by Section 4 permits and constructed by permittees.

The estimated amount of surface disturbance that has occurred from the implementation of the above mentioned actions is approximately 35 acres per year. The vegetation aspect has been altered an average of 620 acres per year as a result of chemical spray on pinyon-juniper and rabbitbrush. The herbicides are usually selective and leave only grasses and tolerant shrub species. It is anticipated that a visual change resulting in disturbance from vegetative land treatments to be done in the future will occur on approximately 3,000 acres per year. The seismic surveys and 1 to 3 wildcat wells would disturb approximately 3 to 15 acres per year. Trampling of vegetation by vehicles, and removal of vegetation at the well site during construction would be a short-term impact. A producing well would double the size of the area disturbed to about 6 acres. The area would be reclaimed to its natural state and provide a long-term benefit of vegetation to livestock and wildlife. Table 4-1 identifies the amount of surface disturbance caused by each rangeland improvement constructed, and Appendix C mentions some of the rangeland improvements and gives a brief description of project construction and effects.

Planned management actions would cause the following adverse and unavoidable impacts



which cannot be mitigated. These short-term impacts are listed below.

- Approximately 35 acres of vegetation would be disturbed by new rangeland improvements.
- Vegetative land treatments would disturb approximately 3,000 acres per year.
- Fluid leasing activities would disturb approximately 3 to 15 acres per year.

These same planned actions would also alter the existing situation with respect to resources and management. The irreversible and irretrievable commitment of resources from the actions taken are listed below:

- Vegetation loss on 35 acres from the construction of rangeland improvements would be irretrievable until fully reclaimed. Loss of about 7 animal unit months (AUMs) annually for the life of the project would take place.
- Vegetation altered through vegetative land treatments on 3,000 acres annually would be irreversible.

#### WILD HORSES

Under Continuing Management Guidance and Actions, surface disturbing activities will have little or no effect on the wild horses, other than some minor disturbance to the herds when a fence, pipeline or other rangeland improvement is developed. Horses will continue to be water trapped at the horse corral to maintain numbers at the established levels specified in the Wild Horse Management Plan (WHMP). Stress to the wild horses from these activities is unavoidable.

#### LANDS

Potential impacts associated with the authorization of surface disturbing activities, outlined in Table 4-1, do not in themselves constitute a noticeable impact to the lands program. However, in a general sense the cumulative effect of these surface disturbing activities may impact potential future disposal actions in both a positive and

negative way. Road and utility developments may increase the disposability of some parcels of land; whereas, material and vegetative sales may hinder BLMs ability to subsequently dispose of a specific parcel.

Since the exact locations and extent of disturbance of these continued management actions are not known, further impact analysis is not feasible.

#### FORESTRY

Under the Continuing Management Guidance and Actions section an estimated total of 1,216 acres per year will be disturbed during the life of this planning document. These disturbed areas would be the direct result of those actions identified in Table 4-1 which occur in forest or woodland areas.

The forestry resource will continue to be impacted through the short and long terms from certain continuing management actions. These impacts will consist of destruction and/or alteration of various forestry management areas. These negative impacts to the forestry resource will be the direct result of the physical aspects of: (1) construction of rangeland improvements, (2) vegetative land treatments, (3) various leases, permits and rights-of-way, (4) geophysical exploration activities, (5) possibly oil and gas production-related activities, (6) wildfires, and (7) fuelwood theft. However, some of these continuing management actions will benefit the forestry resource. The positive impacts to the forestry resource will be the direct physical aspects of (1) soil and watershed protection facilities (i.e., detention dams, diversions, water spreaders, and wire checks) and (2) increased access into forest and woodlands which will aid in harvesting these resources.

#### SOILS/WATER RESOURCES

Under Continuing Management Guidance and Actions an estimated 4,309 acres per year will be disturbed over the life of the plan from all surface disturbing activities with the exception of cultural and other enclosures (Table 4-1). In areas where there are highly

erosive soils and critical watersheds there is the potential for short-term intensive erosional losses through wind and water until mitigation measures are applied. These areas will be reclaimed and stabilized. The overall cumulative impacts to soil and water resources are considered to be minimal. In addition, many of the continuing projects are designed and implemented to benefit either vegetative cover or animal use, or to resolve existing soil/water resource problems. These projects form the majority of surface disturbing activities and have favorable short- and long-term impacts to soil and water resources.

#### AIR QUALITY

Available data in existing EIS's indicates that no overwhelming impacts to the quality of the air have occurred due to continuing management actions. Any impacts that might occur are minimal, localized and of short duration.

#### WILDLIFE

Rangeland improvements and vegetative land treatments will continue to be developed in various habitats within the SRA to improve and/or maintain forage production and ecological range conditions for wildlife.

Under the Continuing Management Guidance and Actions section (Table 4-1) an estimated total of 4,829 acres per year will be disturbed from all activities during the life of this planning document.

Wildlife habitats will continue to be impacted through the short and long terms from these continuing management actions. These impacts will consist of habitat privacy intrusions, and destruction and/or alteration of various habitats which will render the affected habitats as unsuitable for various wildlife species. Some of these continuing management actions, however, will benefit the wildlife resource. The continued development of springs, construction of habitat exclosures and construction of wildlife watering facilities all have immediate positive impacts on the wildlife resource by expanding the amount of usable habitats. Also, the

pipelines, reservoirs, and wells constructed for livestock will benefit the wildlife resource in the same manner as indicated above but to a smaller extent due to the direct competition between livestock and wildlife. The various vegetative land treatments will be designed to benefit the wildlife resource also; however, most of these benefits (i.e., increased available forage and increased preferred forage) will be long term.

#### Threatened or Endangered Species (Animals)

All current management practices will give consideration to threatened or endangered (T&E) animal species according to Federal law.

#### CULTURAL RESOURCES

Actions and activities of other BLM programs which are common to all alternatives shall be conducted in accordance with all laws, regulations, and guidelines to result in no effect or no adverse effect upon cultural resources.

There are two Holistic grazing systems presently in operation in the SRA. One objective of these systems is to increase "hoof action" for soil aeration and reseeding. These systems would be the subject of immediate concern if this objective was being met. However, this does not seem to be the case and, except for cell centers, which are archeologically surveyed as direct impact zones, "hoof action" appears to be no greater than under standard grazing systems. The Holistic system is successful in forcing cattle into previously underutilized environments such as steep hillslopes and therefore could result in impacts to sites in certain settings which are affected to a lesser degree by more conventional systems. In order to evaluate special problems which could be occurring under the Holistic system it is recommended that sites of similar classes and topographic/environmental settings be identified in Holistic and conventional grazing areas and monitored annually over a 10-year period.



## PALEONTOLOGY

Activities of other BLM programs generally produce no adverse effects upon paleontological resources.

## RECREATION/OFF-ROAD VEHICLES

Assuming the worst case analysis for Table 4-1, an estimated 4,829 acres per year or 96,580 acres over a 20-year period will be impacted by various surface disturbing activities. It is uncertain as to where these impacts will occur; therefore, detailed impact analysis is not possible. As surface disturbing actions occur, recreation would gradually be degraded. Over the long term, the estimated 96,580 acres of surface disturbance will reduce semi-primitive recreation opportunities.

## VISUAL RESOURCES

Assuming the worst case analysis for Table 4-1, an estimated 4,829 acres per year or 96,580 acres over a 20-year period would be impacted by various surface disturbing activities. It is uncertain as to where these impacts will occur; therefore, detailed impact analysis is not possible. As surface disturbing actions occur, visual resources would gradually be degraded. Over the long term, the estimated 96,580 acres of surface disturbance will reduce the scenic quality of Class A areas within the SRA.

## SOCIAL AND ECONOMIC CONDITIONS

Potential impacts associated with the authorization of surface disturbing, continuing management actions outlined in Table 4-1 do not in themselves constitute a noticeable impact to social and economic conditions. However, in a general sense the cumulative effect of these activities may impact potential future disposal actions in both a positive and negative way. Road and utility developments may increase the fair market value of some parcels of land. Future surface disturbing activities will effect land values and will effect the social and economic well-being of some of the people residing

within the SRA, yet since the exact magnitude and locations of these actions is not known, further impact analysis is not feasible. It is believed that these impacts would not affect social and economic conditions.

The assumptions used in analyzing social and economic impacts, which are common to all alternatives, can be seen in Appendix K. These assumptions generally apply to the vegetative use issue as they relate to ranch outcrops and the potential economic impacts to grazing allottees.

## THE PROPOSED IMPACTS BY ALTERNATIVE

### ALTERNATIVE A - (CURRENT MANAGEMENT)

#### MINERALS

Resolution of the vegetative use, access, and wild horse management issues have no impact on mineral resource development.

#### Leasables

##### Oil and Gas

Resolution of the ORV use, special management area (SMA), and coal leasing issues and the rights-of-way management concern have no impacts on oil and gas development.

Actions proposed under the land ownership adjustment issue may transfer up to 61,670 acres of scattered, BLM administered parcels. These disposals would affect approximately 19,800 acres, or 2 percent, of the "low to moderate" oil and gas potential and 13,000 acres, or 6 percent, of the "moderate" oil and gas potential within the SRA-administered mineral estate (see Table 4-2). If mineral estates are transferred to non-Federal ownership, they may become unavailable for development. Since few of the parcels currently have legal access, disposal of the surface may only create a minor additional impediment to development. Only minor impacts to oil and gas development would be anticipated under this issue as minerals would be retained in areas of significant mineral potential.

TABLE 4-2  
Oil and Gas Resources Potentially Affected  
by the Land Ownership Adjustment Issue -  
Alternatives A, B, C, and D

Alter- native	Potential		
	Low	Low to Moderate	Moderate
	Acres/%*	Acres/%*	Acres/%*
A	0/0	19,800/2	13,000/6
B	1,400/1	251,700/30	175,800/78
C	1,800/1	131,800/16	140,600/62
D	41,100/22	421,400/51	208,900/92

\* Percent of BLM-administered mineral estate, by potential, under consideration for disposal (rounded to the nearest hundred acres).

Oil and gas leasing would be restricted on approximately 38 percent of the Federal mineral estate administered by the SRA as a result of existing fluid leasing stipulations. Surface occupancy would be subject to the discretion of the BLM on approximately 25 percent of "low" potential areas, 17 percent of "low to moderate" potential areas, and 6 percent of "moderate" potential areas administered by the SRA. Table 4-3 summarizes the effects of existing fluid leasing decisions on the oil and gas resources under this alternative. Included within the above percentages are wilderness study areas (WSA) which have been closed to leasing by directives of recent appropriation acts. These statutory "defacto" closures affect 17 percent of "low" potential areas and 10 percent of "low to moderate" potential areas.

In addition to the aforementioned restrictions, the White Sands Missile Range (WSMR) Extension Area temporary evacuation stipulation would be applied to 62 percent of the "low" potential and 30 percent of the "moderate" potential lands managed by the SRA. This stipulation requires no surface occupancy for only brief and infrequent periods and is not considered to cause any significant impact on exploration or development activities.

Discretionary actions under this alternative would restrict surface occupancy on a substantial portion of Federal lands, but no additional lands would be closed to leasing within the life of the plan with the exception of the designated wilderness areas. An impact may result to future oil and gas development if all surface and mineral estates proposed for disposal leave Federal ownership, but the BLM's disposal policy would support retention of areas of significant oil and gas potential. Thus, overall, discretionary actions under this alternative would only cause minor impacts to oil and gas exploration and development.

#### Coal

Resolution of the ORV use and SMA issues and the fluid leasing and rights-of-way avoidance area management concerns under this alternative would not impact coal development.

Actions taken under the land ownership adjustment issue could encumber future coal development and result in the transfer of public assets of substantial future value to individual surface estate owners. Approximately 14,000 acres, or 45 percent, of BLM-administered surface and mineral estate within the part of the Datil Mountain Coal Field that is located in the SRA is proposed for disposal. Approximately 8,000 acres, or 8 percent, of the BLM-administered surface and mineral estate within the Salt Lake Coal Field is also proposed for disposal. Disposal areas within the Salt Lake Field include approximately 280 acres or 1 percent of the area currently known to contain potentially economic coal deposits. This proposed disposal could lead to decreased availability.

The creation of split-estate lands could result in additional qualified surface owners within areas of coal potential. Under the Surface Mining Control and Reclamation Act of 1977 qualified surface owners may even opt to deny coal mining entirely. It has been well documented that qualified surface owners above Federally-reserved strippable coal have received up to 50 times the fair market of



TABLE 4-3  
Oil and Gas Resources Affected by Fluid Leasing Decisions  
Alternative A

Fluid Leasing Decisions	Potential (in acres)				Total
	Low	Low to Moderate	Moderate	No Known	
Open to Leasing	186,000	827,000	226,000	1,066,000	2,305,000
Surface Occupancy Restricted Only by Standard Leasing Provisions	22,000	638,000	145,000	578,000	1,433,000
Surface Occupancy Restricted by:					
Required mitigation of protected resources	0	0	0	0	0
Management discretion	49,000	139,000	14,000	275,000	477,000
Seasonal management discretion	0	0	0	0	0
WSMR Extension Area	115,000	0	67,000	213,000	395,000
No Surface Occupancy Restrictions	0	0	0	0	0
Closed to Leasing *	0	0	0	0	0
Discretionary closure	0	0	0	0	0
Withdrawals	0	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.

comparable surface estates as a result of surface owner consent requirements under the Surface Mining Control and Reclamation Act of 1977 (Linowes 1984). Surface owner consent costs erode Federal lease bonuses and may result in smaller, shallower mines. Impacts due to split estate ownership of coal as a result of land disposals should be nonexistent due to the surface estate disposal policy allowed in Appendix E. The policy states that all surface estate patents will carry a reservation which waives the surface owners rights of consent under the Surface Mining Control and Reclamation Act of 1977.

Under this alternative no areas would be brought forward for further consideration for coal leasing. Opportunities to develop BLM-administered coal resources within the SRA would be foregone during the life of the plan.

Overall, actions taken under this alternative would suppress the development of coal resources currently under demand for the short term and could have substantial impacts on the public's control of and return from current Federal coal resources.

#### Geothermal

Resolution of the ORV use, SMA, and coal leasing issues and the rights-of-way management concern would have no impacts on the development of geothermal resources.

Lands along the Rio Grande which are identified for disposal under the land ownership adjustment issue overlie areas of geothermal potential. Since development could occur on Federal lands adjacent to the narrow disposal area and geothermal resources associated with disposals would be generally reserved, no impact to geothermal development is foreseeable.

Geothermal leasing would be restricted on 38 percent of the Federal minerals managed by the SRA (see Table 4-4). Approximately 94 percent of the area covered by existing fluid leasing stipulations has no known potential for economic geothermal resources. Surface occupancy would be subject to the BLM's discretion for 26 percent of the "low"

potential and 10 percent of the "moderate" potential (the Socorro KGRA) geothermal areas managed by the SRA. No areas would be closed to or withdrawn from leasing with the exception of designated wilderness areas. The WSMR Extension Area evacuation stipulation only affects 3 percent of all areas of low geothermal potential managed by the SRA.

Overall, discretionary actions under this alternative would have very little adverse effect on any future geothermal development. Table 4-4 summarizes the effects of the existing fluid leasing stipulations on geothermal resources.

#### Locatables

Resolution of the coal suitability issue and the fluid leasing management concern would have no impacts on locatable mineral development.

Proposed actions under the land ownership adjustment issue could potentially transfer approximately 1 percent of the "moderate to high" mineral potential areas for locatable minerals from the SRA's administration (see Table 4-5). Although this is a minor amount of the acreage open to location, it does contain the Iron Mountain area, which is known to host beryllium and tungsten resources of national interest. The existing mining claims and the BLM's disposal policy would support retention of significant mineral resources and thus would ensure that impacts to mineral development would be negligible under this issue.

Although substantial acreages are classified as limited under the ORV issue, no significant impacts to mineral exploration or development are anticipated. Prospectors and developers may acquire authorization to use vehicles off existing roads and trails within limited areas by merely filing a notice of intent under 43 CFR 3809. No areas are closed to ORV use.

Under this alternative, a very small number of SMAs have been proposed. Only Tinajas carries forth restrictions on locatable mineral development. The restrictions involve the withdrawal of 200 acres from mineral entry,



TABLE 4-4  
Geothermal Resources Affected by Fluid Leasing Decisions  
Alternative A

Fluid Leasing Decisions	Potential (in acres)			Total
	Low	Moderate	No Known	
Open to Leasing	181,000	31,000	2,093,000	2,305,000
Surface Occupancy Restricted Only by Standard Leasing Provisions	129,000	28,000	1,276,000	1,433,000
Surface Occupancy Restricted by:				
Required mitigation of protected resources	0	0	0	0
Management discretion	47,000	3,000	427,000	477,000
Seasonal management discretion	0	0	0	0
WSMR Extension Area	5,000	0	390,000	395,000
No Surface Occupancy Restrictions	0	0	0	0
Closed to Leasing *	0	0	0	0
Discretionary closure	0	0	0	0
Withdrawals	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.

TABLE 4-5  
Areas of High to Moderate Potential for Locatable Minerals Within  
Areas Under Consideration for Disposal - Alternatives A, B, C, D

Known Locatable Mineral Resources Areas (KLMRAs)	Commodity **													
	Aq	Au	Cu	Fe	Mn	Pb	Sn	U	V	W	Zn	Bar- ite	Fluo- rite	Total*
Total square miles of KLMRAs Catron and Socorro Counties	604	478	945	124	331	812	273	550	262	225	455	596	338	1,804
Total square miles of KLMRAs Catron and Socorro Counties administered by Federal agencies	552	413	728	104	215	661	222	204	215	178	401	419	252	1,355
Percent of Federally-managed KLMRAs withdrawn from locatable mineral development (including current BLM wilderness purposes)	13	18	31	0	21	34	14	35	0	0	32	46	64	28
Total square miles of KLMRAs by BLM	89	57	266	83	88	210	64	193	49	51	106	189	106	498
Percent of BLM KLMRAs withdrawn from locatable mineral development (including current wilderness proposals)	0	0	11	0	24	14	41	15	0	0	4.6	15	27	11



TABLE 4-5 (continued)  
 Areas of High to Moderate Potential for Locatable Minerals Within  
 Areas Under Consideration for Disposal - Alternatives A, B, C, D

Known Locatable Mineral Resources Areas (KLMRAs)	Commodity **													
	Aq	Au	Cu	Fe	Mn	Pb	Sn	U	V	W	Zn	Bar- ite	Fluo- rite	Total*
Percent of BLM-managed KLMRAs affected by actions proposed under the land ownership adjustment issue (no withdrawn areas identified)														
Alternative A	3.7	0	0.3	1.2	0	0.4	0	1.3	0	2.0	0.7	0	0.9	1.3
Alternative B	34	20	28	7.3	4.6	13	0	43	8.2	12	17	13	5.7	32
Alternative C	17	7.1	24	0	4.6	11.7	0	39	8.2	7.8	14	13	0	28
Alternative D	68	58	42	12	29	20	0	43	51	53	37	29	14	43
Percent of BLM-managed KLMRAs proposed for with- drawal from mineral entry under SMA issue														
Alternative A	0	0	0.1	0	0	0.2	0	0.2	0	0	0	0.2	0.3	0.1
Alternative B	0	0	0.9	0	0.1	1.2	0	1.3	0	0	0	1.3	2.3	0.5
Alternative C	0	0	6.1	0	11	7.7	0	7.6	0	0	9.7	7.8	14	3.8
Alternative D	0	0	0.2	0	0	0.2	0	0.2	0	0	0	0.2	0.4	0.1

TABLE 4-5 (continued)

Areas of High to Moderate Potential for Locatable Minerals Within Areas Under Consideration for Disposal - Alternatives A, B, C, D

[illegible]

\* It should be noted that many of the KLMPs have potentials for more than one commodity.

\*\* See Table 3-2 for commodity symbols.



and the designation of a 1,280-acre ACEC. This would withdraw less than one-tenth of a percent of the "moderate to high" mineral potential area managed by the SRA. Also, plans of operations would be required for locatable mineral operations within the ACEC pursuant to 43 CFR 3809. This would affect less than four-tenths of a percent of the Federal lands managed by the SRA that lie within areas of "moderate to high" mineral potential. No impacts would result under this issue.

The current right-of-way exclusion areas have no consequential effect on locatable mineral development, since small routine rights-of-way would be allowed throughout the vast majority of the SRA. Also claimants may generally construct utility or vehicle routes to claims under the authority of the 1872 mining law as amended and pursuant to 43 CFR 3809 regardless of right-of-way exclusion areas.

As exhibited on Table 4-5 only about 5 percent of the Federal mineral estate would be withdrawn from location. Inclusive of the existing WSA proposals, approximately 11 percent of the areas of moderate to high potential for locatable mineral resources would be withdrawn. Other than the above proposed withdrawals, the Federal mineral estate is essentially free from other discretionary restrictions; therefore, actions taken under this alternative would have no foreseeable effect upon the exploration and development of Federal resources.

#### Saleables

##### Material Sales

Resolution of the ORV use and SMA issues and the fluid leasing and rights-of-way management concerns would have no impacts on saleable mineral development.

Under the land ownership adjustment issue up to 3 percent of the BLM-managed construction aggregate resources with "moderate to high" potential for development may be disposed of. This includes 5 percent of the "moderate to high" potential aggregate resources occurring

on lands entirely managed by the BLM (see Table 4-6).

The proposed disposal areas paralleling the Rio Grande contain sizable gravel resources. Although sizable reserves occur outside of the disposal area, the BLM's mineral disposal policy (Appendix B) would continue to promote retention of any superior material sources within the disposal areas. Community expansion facilitated by disposals along the Rio Grande would increase the need for construction aggregates and provide a stimulus for the development of mineral materials.

Construction aggregates would be required to support coal development within the Salt Lake Coal Field. Since Federal coal areas would not be made available for leasing under this alternative, the demand for mineral materials would be lower than in an unrestricted market situation. Although no impact to existing activities would be expected, the opportunity to develop supporting construction aggregate sources would be foregone in the short term.

Overall, no impacts to mineral development would result from decisions under this alternative. No lands other than the existing wilderness proposals would be restricted or withdrawn from mineral material development.

##### RANGELAND

Resolution of the access, SMAs, wild horse management, and coal leasing suitability issues and the right-of-way avoidance management concern would have no impact on rangeland resources under this alternative.

Under the land ownership adjustment issue, 61,670 acres are identified under the Divide and Middle Rio Grande Management Framework Plans (MFP) for disposal. The lands are mostly isolated scattered tracts. Approximately 9,230 AUMs of grazing use, with revenues totaling \$12,460 per year from grazing fees, would be lost from this action.

The disposal of public lands by exchange would be emphasized. This would allow revenues from grazing fees to continue to be received and public lands to be "locked up" for better

TABLE 4-6  
Impacts to Mineral Material Resources by Alternative

	Alternative			
	A	B	C	D
Acres of all BLM managed mineral estate with high to moderate potential identified for disposal.	4,500	13,500	9,900	46,000
Percent of all BLM managed mineral estate with high to moderate potential mineral estate proposed for disposal	3	9	7	31
Percent of all wholly BLM managed lands (surface and mineral estates) with high to moderate potential proposed for disposal.	5	7	4	24
Acres of BLM managed mineral estate excluded from material sales	0	0	112,500	0
Acres of BLM managed areas of high to moderate potential excluded from material sales.	0	0	640	0
Percentage of BLM managed areas of high to moderate potential excluded from material sales.	0	0	0.4	0
Acres of BLM managed mineral estate with restricted material sales.	0	112,500	0	0
Acres of BLM managed areas of high to moderate potential with restricted material sales.	0	640	0	0
Percent of BLM managed areas of high to moderate potential with restricted material sales.	0	0.4	0	0

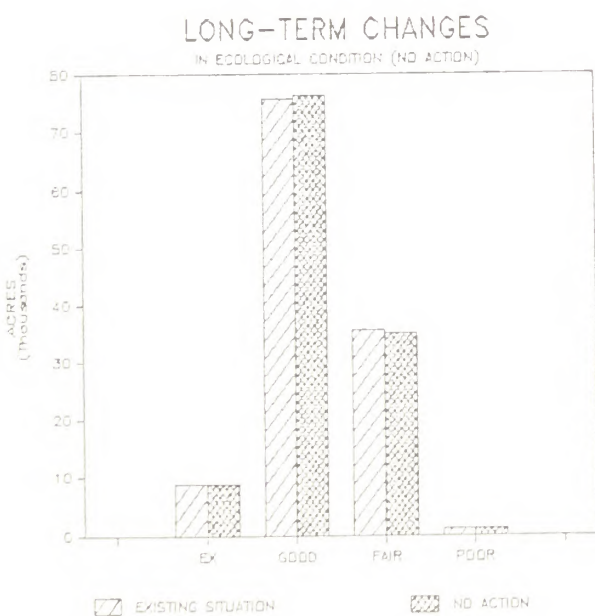


management of the lands. Areas identified in the old MFP documents (Ladron and Divide) will receive primary attention.

Under this alternative the intensity of grazing use in the Chupadera Mesa area would not change; however, forage would increase steadily over the long term. There are currently 28,008 AUMs authorized. An additional 560 AUMs of forage production would be expected to become available. Forage allocation to wildlife would remain constant.

Management on the different allotments appears to be satisfactory. Allottees follow some type of grazing system, the majority a deferred-rotation system. Utilization levels are moderate, vegetation appears vigorous. The effects of good management can be seen in the present ecological condition and apparent trend ratings as shown in the Affected Environment Chapter under Chupadera Mesa. Approximately 15,000 acres of fair and poor ecological range condition have a potential for improvement through management and vegetative land treatments. Figure 4-1 illustrates the expected long-term changes in ecological condition (excellent, good, fair, and poor) for allotments within the Chupadera Mesa area.

FIGURE 4-1



Funds for rangeland improvements would still be made available to the allottees. Rangeland improvements are needed on allotments to correct minor problems (i.e., uneven distribution) existing now, as they could potentially become serious. These isolated problem areas would be treated as "I" areas and would receive the needed management actions. Approximately 5 acres per year would be disturbed from the construction of rangeland improvements.

Although beneficial in the long term, rangeland improvements do cause short-term impacts on the vegetative resource. Loss of vigor due to trampling, trailing along fences, removal or disturbance of vegetation during construction, and "sacrifice areas" around waters are some of the impacts associated with the construction and use of rangeland improvements. In the long term, improvements in ecological condition can be expected. Increases in forage production would result due to the improved vigor and even distribution of livestock could result from the proper placement of rangeland improvements.

Under this alternative, ORV use would be closed on -0- acres, open on 479,070 acres and limited on 936,500 acres. Impacts to vegetation associated with ORV use include loss of vigor, production, and decline in ecological condition on areas of heavy use.

Fluid leasing would have a minor impact on the vegetation resource. Impacts to vegetation are similar to those identified in the Continuing Management Guidance and Actions. The acres impacted would depend on the amount of fluid leasing activity taking place in the area. T&E habitat would limit fluid leasing activity. Currently, 12,000 acres of T&E habitat are identified.

In summary, on the Chupadera Mesa area slight increases in ecological condition and forage production can be expected for some allotments. Minor problems must be corrected or they could become serious. Short-term negative impacts would occur from the construction of rangeland improvements. Long-term increases and improvement in vegetation can be expected.

Coal mining activities when they occur, likewise would disturb and remove vegetation in the short term. In the long term, the area would be restored to its natural state through reclamation.

Unavoidable adverse impacts occurring from this alternative include; 5 acres of vegetation disturbed by new rangeland improvements, and vegetation disturbed from fluid leasing activities.

Construction of new rangeland improvements would result in the irretrievable loss of 5 acres and 1 AUM annually for the life of the project.

#### Threatened or Endangered Species (Plants)

The majority of rare, endemic, T&E plant species occur in the area of no oil and gas potential. Some species do exist in areas of low to moderate potential; however, efforts would be made to protect these plants.

#### WILD HORSES

Resolution of the vegetative use, access, SMA, and coal leasing suitability issues and the fluid leasing and right-of-way concerns would have no impact on the wild horses under this alternative.

Under this alternative there would be no ability to acquire non-public lands within the wild horse management area (WHMA). This would negatively impact BLM's ability to properly manage the wild horse herd.

This alternative designates ORV use in the area as being "limited" to existing roads and trails. Although this designation exists, new roads are being created from wood haulers, hunters, pinyon nut gatherers and others. These activities as well as other recreation in the WHMA could increase harassment of wild horses.

Under this alternative wild horses would be managed at the current level of 32 head. Increases from the current level can be expected. However, the excess numbers would be rounded up and removed as mentioned in Chapter 2, Continuing Management Guidance,

under the Wild Horses section. Monitoring studies indicate adequate forage is available for livestock, wildlife and wild horses. No significant conflicts have been identified. Presently 384 AUMs are allocated to wild horses, 63 AUMs to wildlife and 3,276 AUMs to livestock.

Inbreeding of the wild horses has occurred in the relatively small herd that exists within the WHMA of 19,600 acres. Most livestock producers are familiar with the effects of inbreeding and they avoid it as much as possible. It is avoided because past experience has shown that inbreeding is usually associated with the appearance of genetic defects and a general, over-all decline in vigor and performance. A decline in traits such as fertility, viability, growth rate, and conformation can occur (Lasley 1972). No mention is made in the present plan to introduce outside, superior stock to improve the herd. Therefore, the above mentioned effects from inbreeding are likely and could be detrimental to the future makeup of the herd.

Better control and management of the wild horses can be accomplished through the maintenance of fences.

The BLM will continue to meet its responsibility under the Wild Horse and Burro Act of 1971. Continuation of the present management will ensure the accomplishment of goals and objectives of the WHMP. The wild horses would remain at 32 head and would not improve in physical appearance or genetic traits due to their continued inbreeding over time. The adoption demand of horses with poor conformation and physical characteristics is low. Unavoidable adverse impacts are the same as in Continuing Management Guidance and Actions.

#### LANDS

Resolution of the vegetative uses, SMAs, wild horses, and coal issues would have no impact on the lands program under this alternative.

Resolution of the land ownership adjustment issue would greatly affect the lands program



under this alternative primarily within Catron County and along the Rio Grande. The SRA would, over the long term, dispose of 61,670 acres of scattered and isolated public lands in these areas, and in turn, 34,650 acres of private and State lands would be acquired to benefit the various other resource programs. Table 4-7 and Table 4-8, identify in general terms, the primary impacts associated with land ownership adjustments. Since land ownership adjustments under this alternative would be limited to those identified in the Ladron, Divide and Middle Rio Grande MFPs, the SRA would continue to be responsible for the management of the majority of the small and isolated public land tracts within Socorro County. These lands, with limited or no legal access, would continue to pose management problems for the BLM, and there would be no opportunity for the other resource programs to acquire needed non-public lands to enhance their programs within most of Socorro County.

TABLE 4-7  
IMPACTS OF DISPOSING OF PUBLIC LANDS  
FOR ALL ALTERNATIVES

Positive	Negative
Potential for placing land in a higher use such as agricultural, commercial, or residential.	Potential loss of resource values, primarily wildlife and cultural.
One time payment to U.S. Treasury (for sales only).	Loss of future revenues from land-use authorizations.
Decreased management costs for the BLM.	
Potential increase in local property tax revenues.	High cost of processing disposal.
Could relieve current allottee of payment of grazing fees.	Potential economic strains on person who currently uses land out cannot afford to purchase it.
Can provide additional land for residential development in urban areas.	Possible additional encumbrance and development costs of mineral rights.
Opportunity for ranchers to block up their holdings.	

Acquisition of private and State lands within SMAs would not be possible under this alternative; this would limit the BLM's ability to effectively manage these areas.

TABLE 4-8  
IMPACTS OF ACQUIRING NON-PUBLIC LANDS  
FOR ALL ALTERNATIVES

Positive	Negative
Improves resource values of existing public lands.	Can displace existing, authorized users if current use conflicts with management plans for the area.
Can provide improved public access to important resource values.	
Improves manageability of existing public land by eliminating private and State inholdings with potential for conflicting uses.	Substantial costs in processing cases.
Creates more manageable land ownership patterns.	May adversely affect the tax base of one or more counties.
Improved manageability can decrease administrative costs.	May sacrifice one or more private interests to benefit other public interests.

Should this alternative be selected for the resolution of the ORV issue, the lands and realty program would be slightly affected in that right-of-way placement may be somewhat more difficult on the eastern side of the SRA on land designated as limited to ORV. In these cases temporary use permits would need to be issued to allow survey and design work to be completed before the applicant could apply for a right-of-way.

Under this alternative the lands staff would continue to pursue the acquisition of an easement into Fort Craig as well as pursuing various other easements on a case-by-case basis as specific needs develop.

Fluid leasing has been identified as a management concern common to all alternatives. Various levels of oil and gas development would undoubtedly create the necessity to process varying amounts of realty actions; however, fluid leasing in of itself would have no direct effect upon the lands resource.

Right-of-way exclusion and avoidance areas are not identified within this alternative. Should this alternative be selected, major rights-of-way would need to be located within one of the existing Tucson Electric Power, El Paso Electric or US Highway 60 corridors.

Should the need arise for the placement of a major right-of-way facility outside of these corridors, an amendment to this plan would be necessary. Placement of smaller rights-of-way would be assessed on a case-by-case basis, yet would not be specifically prohibited anywhere within the SRA except within the vicinity of the Sawtooth T&E plant species and National Register historical sites.

In summary, the lands program would be unable to pursue land ownership adjustments in roughly the east half of the SRA, and its ability to pursue the acquisition of needed lands to enhance various other resource programs would be quite limited.

#### FORESTRY

Resolution of the vegetative use, ORV use, SMA, wild horse, and coal leasing suitability issues under this alternative would have no impacts on the forestry resource.

Limited disposal or acquisition of lands would affect the forestry program. If lands supporting forest or woodlands are disposed of, it would reduce the acres available for management. If more lands are acquired that have forest or woodlands growing on them, it would increase acres available for management of fuelwood, posts, etc.

Additional access supports the forest and woodlands program but loss of access would be detrimental to the program. Access would be

affected either positively or negatively by the disposal or acquisition of lands.

Under this alternative, the fluid leasing management concern could impact the forestry resource. If production occurs, efforts should be taken to minimize, protect or salvage the vegetative material.

The forestry resource throughout the SRA would be subject to increased destruction under this alternative resulting from various types of rights-of-way (i.e., telephone, electric, roads, and pipelines). All major types of rights-of-way (i.e., 345kv electric, highways, and gas lines) would be confined to existing, designated corridors or would require a site-specific EIS. The amount of impact would directly relate to the number, type, and locations of the rights-of-way.

Continuation of present management would result in both short- and long-term surface disturbing impacts to 1,216 acres of the forestry resource. These impacts would consist of the destruction and/or alteration of the forestry resource.

The short- and long-term impacts would be the direct result of the physical aspects of construction of rangeland improvements, various leases, permits and rights-of-way, geophysical exploration activities, possibly oil and gas production-related activities and wildfires.

Efforts would be taken to salvage all forestry products effected as a result of impacting actions indicated above.

#### SOILS/WATER RESOURCES

The access, SMA, wild horse, and coal issues would have no impact to soils and water resources under this alternative.

Under this alternative, 61,670 acres could be transferred out of BLM administration. This action would also result in transfer of some long-term soil improvement and erosion control structures. Since lands will primarily be exchanged or sold, the BLM would be



compensated for their appraised value. If the structures are maintained by the party or agency acquiring the lands, no impacts to the soils resource would occur. If the structures are not maintained, sediment and salt loads to lower basin users would increase.

Present vegetative use is addressed in the East Socorro Grazing ES and the West Socorro Rangeland Management Program EIS with the exception of the Chupadera Mesa area (see vegetative use Affected Environment for description). In general, continuation of present grazing management within the Chupadera Mesa area would not change soil erosion and sedimentation. However, fragile soils do exist in some areas and current patterns of livestock use, i.e. uneven livestock distribution, could eventually lead to soil erosion. This impact is localized in a few drainages and does not constitute a major problem.

Open ORV use in critical watershed areas would have both short- and long-term impacts due to unrestricted surface disturbance with accelerated erosion. Increased motorized vehicle use would result in the creation of new roads and trails, with a subsequent increase in erosion and sediment production. Expansion of the road and trail networks would also provide access to areas where none existed previously, resulting in increased surface disturbance, erosion, and sediment production.

Specific impacts as a result of fluid mineral leasing and production are identified in the Oil, Gas, and Geothermal Leasing EA (1982) located in the SRA. These impacts consist of soil compaction from overland travel of vehicles, possible soil destruction, decreased fertility, and increased susceptibility to erosion by wind and water. Increased gully erosion can result where pads, roads, trails, and ancillary facilities are improperly sited or constructed resulting in long-term adverse impacts.

Under this alternative, fluid leasing and production would take place over the life of the plan subject to limitations in critical erosion watershed areas of which 57,000 acres are currently identified. In addition,

mitigation measures would ensure proper siting and reclamation.

Under this alternative between 3,200 acres and 50,000 acres (under a new field production scenario of worst case) of soils/water resource could be impacted.

Cumulative impacts to the soils/water resource from fluid leasing, therefore, would generally be of a short- (where exploration is taking place) to long-term nature (where production is established and roads and ancillary facilities are necessary for the life of the field).

Under this alternative right-of-way exclusion and avoidance Areas would create no impacts other than those described under continuing management since site-specific analysis and mitigation would be applied. There would be some restrictions as to location of facilities in critical erosion watershed areas.

In summary, continued loss of soil to wind and water erosion constitutes an irretrievable loss of an important resource. Surface disturbance including open ORV use in critical watersheds would result in both short- and long-term degradation of the watershed condition.

Continuation of current grazing management would not reduce existing erosion and sediment production. Increased erosion could be expected where control structures are disposed of through land exchange or sale and not maintained.

#### AIR QUALITY

Available data in existing EIS's indicates that no overwhelming impacts to the quality of the air have occurred due to current management practices. Emission standards as defined by law have been exceeded in localized areas for short periods of time; however, this is not indicative of significant impacts in the SRA.

In summary, there is no overwhelming impact to air quality as a result of current management practices.

## WILDLIFE

### Wildlife Habitat

Resolution of the access, the SMAs, the wild horse, and the coal leasing suitability issues would have no impacts on the wildlife resource.

Under this alternative, limited land ownership adjustments would occur. This would restrict the acquisition of valuable wildlife habitat to areas identified in the Divide MFP (15,150 acres) and to small acreages (19,500 acres) within the Ladrón Mountains MFP.

Currently there are 267 allotments in the SRA that are in the Improve (I) or Maintain (M) categories. With the exception of the Chupadera Mesa area, this alternative would result in no change in numbers or seasons of use that could improve overall habitat conditions.

Under this alternative, however, the authorized grazing use would increase slowly in the Chupadera Mesa area. This would result in short-term negative impacts to the wildlife resource in the Chupadera Mesa area because only 500 AUMs are currently allocated to wildlife for this area and 830 AUMs are needed to support the existing wildlife population. Over the long term it is impossible to determine the wildlife population needs for AUMs but the demand is expected to increase as the populations increase.

Food habitat studies conducted in the SRA have shown that there is considerable dietary overlap between wildlife and livestock. Even though extensive dietary overlap exists, there is not necessarily competition for forage, unless a lack of availability occurs. In the majority of allotments and even where there is extensive use by both livestock and wildlife, competition does not normally occur. Competition is most often created by extremes in weather such as a drought. The limited availability of forage can cause competition during drought conditions resulting in dietary overlap increases and plant production decreases.

Wildlife habitat throughout the SRA would be subject to increasing degradation of habitat

privacy if there are no restrictions to motorized vehicle use. Presently, new roads in the SRA are being created by motorized vehicle users, including hunters, wood haulers, and pinyon nut gatherers leaving established roads and creating new physical access for poaching and other unauthorized uses of the public lands. The additional roads also destroy vegetation, increase soil compaction, and increase erosion and soil loss.

Under this alternative the fluid leasing management concern could (if production occurs) impact 7,000 acres of bald eagle habitat, 87,000 acres of pronghorn habitat, 1,100 acres of raptor habitat, and 11,500 acres of potential bighorn sheep habitat. These impacts would be the result of the above listed special resources not being adequately protected within the existing oil and gas stipulations. The amount of impact would directly correlate to the amount of production (see Table 4-1). These impacts would consist of degradation of species privacy and destruction of habitat.

Wildlife habitat throughout the SRA would be subject to increased degradation of species privacy and destruction under this alternative resulting from various types of rights-of-way (i.e. telephone, electric, roads, and pipelines). All major types of rights-of-way (i.e., 345 kv electric, highways, and gas lines) would be confined to existing designated corridors or would require a site-specific EIS. The amount of impact would directly relate to the number and type of rights-of-way.

Continuation of present management would result in both short- and long-term changes in the wildlife resource (i.e. habitats and populations). The major short-term impact would consist of habitat privacy intrusions during crucial periods of the year (i.e. fawning seasons, nesting seasons, and etc.).

This short-term impact would be the direct result of the physical aspects of construction of rangeland improvements and various leases, permits, and rights-of-way, ORV use, various other recreational activities, geophysical exploration activities and possibly oil and gas production-related activities.



The major long-term impact would consist of destruction and/or alteration of various habitats which would render the affected habitats and some adjoining habitats as unsuitable for various wildlife species. These long-term impacts would be the result of the same activities as were listed above for the short-term impacts but would also include land disposals.

#### Threatened or Endangered Species (Animals)

There are no impacts to listed T&E animal species under this alternative.

#### CULTURAL RESOURCES

The acquisition of legal easements to address the access issue would have no effect upon cultural resources. Resolution of the land ownership adjustment issue would have no adverse impacts on cultural resources since a Class III inventory and subsequent mitigation of National Register eligibility is required prior to exchange or sale. There would be no impacts to cultural resources on lands transferred to other Federal agencies. A memorandum of understanding (MOU) with the State of New Mexico outlines mitigation procedures for exchange of BLM surface to State ownership. Consultation with Indian Tribes would be conducted to ensure that locations of traditional religious significance are not inadvertently passed from Federal ownership.

Acquisition of lands which contain significant sites would have positive effects on cultural resources. In areas where the BLM acquires surface ownership over non-Federal minerals, consultation procedures should be established to ensure that cultural resources sites on Federal surface are not impacted by approval of proposed mineral actions by State or private entities.

The effects of vegetative use through livestock grazing are generally low-level, except where conditions combine to concentrate cattle. Proximity to water, certain types of forage, natural barriers, or fences, could result in channeling cattle behavior to result in intensive impacts to sites. No sites are

presently known to suffer from such impact, but the proposed SRA 10 percent inventory should help identify problems and administrative actions for mitigation.

ORV travel in SRA is generally light and dispersed. Intensive use occurs in a few contained areas immediately east of the town of Socorro, centering on dry arroyo beds. The present SRA Patrol and Surveillance Plan addresses potential damage to sites in these areas through periodic site visits. Over the life of this plan, intensive use could expand to impact cultural resources and continued patrols are required to identify potential impacts for administrative measures such as fencing before adverse effects occur.

The proposed SRA's 10 percent cultural resources inventory should help identify areas where impacts from ORV travel may occur. Mitigating measures to reduce these impacts include public education, patrolling, and restricting ORV travel in potentially affected areas.

None of the alternatives for wild horse management would raise herd densities to levels which would exceed livestock carrying capacities. Cultural resource densities within the wild horse area are expected to be low to moderate. These conditions suggest that impacts upon cultural resources from wild horses should be no greater than normal effects expected from all forms of grazing.

Under this alternative there would be no coal leasing. The issue of land disturbing vegetative uses and access are subject to existing procedures which are designed to result in no adverse effects.

The management concerns of fluid leasing and right-of-way exclusion and avoidance areas would have no effect on cultural resources, and would be managed in accordance with relevant laws and regulations.

Under this alternative impacts upon cultural resources would hold steady, with no new source of impacts introduced through management of the issues, and with sufficient safeguards under existing procedures to ensure

no adverse effects upon the resources as a result of Federal undertakings. No new SMAs would be defined, but measures of protection and management could be employed under continuing regulations and guidance, such as the development and implementation of cultural resource management plans (CRMPs) to meet special needs of specific sites.

#### PALEONTOLOGY

Continuation of current management practices is adequate to avoid impacting the paleontological (paleo) resources. Impacts are mitigated on a case-by-case basis.

The issues and management concerns of this alternative are considered to have negligible effect upon paleo resources. Transfer of paleo localities to the State of New Mexico is considered to pose no adverse effect because of special expertise within State government in the management of paleo resources. Transfer of important localities to private ownership would be subject to screening under the cultural resource criterion for land transfers. No localities warranting nomination as SMAs are presently known, but new discoveries can be afforded protection and management consistent with this RMP through existing procedures, such as development of a CRMP.

Under this alternative, impacts upon paleo resources would be negligible. No SMAs for paleo would be established, but no localities warranting such designation are presently known. In the absence of coal leasing, paleo investigation, which is required to evaluate the significance of this resource in the SRA would continue at a steady, but very low level of intensity.

#### RECREATION/OFF-ROAD VEHICLES

The wild horse management issue would have little impact on recreation. Opportunities to view wild horses should a person desire to, would still exist as approximately 32 horses would remain in the WHMA. As no lands would be brought forward for coal leasing, there would be no impact to recreation resources within the SRA.

As the Divide, Ladron, and Middle Rio Grande MFPs are the only existing land-use plans which contain land ownership adjustments, opportunities to enhance and improve management of visual and recreation resources would be limited. These plans generally call for disposal of approximately 61,000 acres of isolated unmanageable parcels of BLM land. Currently, opportunities for exchange and or acquisition of important scenic and recreational lands are limited to areas in Catron County, and to the Ladron Mountain area within Socorro County. Consolidation of important recreational areas would be limited and these resources would degrade due to manageability problems.

Continuing current grazing practices would have minimal impact on most dispersed recreation resources, but would have a greater impact on developed and intensively used recreation areas. Popular recreation sites would continue to be trampled by cattle and thus degrade recreational resources in the long term. Conflicts would occur in the Tinajas SMA which is undeveloped.

ORV use in the eastern half of the SRA would be generally limited to existing roads and trails with some small open areas in arroyo bottoms along the east side of the river. The western half of the SRA would include some areas limited to existing roads and trails and others open to ORV use. These designations are shown on ORV Map 2-3 in Chapter 2. This alternative would include designation of 584,110 acres "open" and 936,500 acres "limited" to existing roads and trails in the SRA. The limited designation for the eastern half of the SRA is unenforceable and does not accurately reflect resources in need of protection or conflicts with the open designation in the west half of the SRA. In some areas, the open designation would cause a reduction in the existing semi-primitive, non-motorized recreation opportunities in the long term (see Appendix I). The creation of more roads and trails, both authorized and unauthorized, would reduce the number of acres available for potential primitive and semi-primitive non-motorized recreational opportunities. Semi-primitive motorized and roaded-natural opportunities comprise a major



portion of the SRA. Permits for organized ORV events would continue to be processed on a case-by-case basis.

The existing easement acquisition program would continue to secure and provide legal access to dispersed recreation areas, primarily on a case-by-case basis. Many areas could provide additional recreational opportunities above and beyond those which currently exist if recreation-related easement needs were identified. Desired limitation of unneeded roads in semi-primitive non-motorized and semi-primitive motorized areas would enhance semi-primitive recreation opportunities.

Not identifying additional SMAs would result in the deterioration and destruction of a wide variety of natural and recreational values. These include wildlife habitat, which provides significant recreation opportunities, recreation access, cultural resources, visual resources, and interpretative/educational opportunities related to these special values. Datil Well, Bat Cave, Fort Craig, Teypama, and Tinajas would continue to be managed as special areas.

If no additional SMAs are identified, a significant opportunity to meet the growing demands from New Mexico tourism would be lost in the long term. Without management protection, recreation opportunities would be degraded from increased user pressure, exploration, and development in nine SMAs totalling 186,590 acres.

Existing fluid leasing stipulations would continue to protect high quality VRM areas within SRA.

The continued application of the existing right-of-way corridors within the SRA may have negative impacts upon recreational resources as routine smaller rights-of-way would probably continue to be permitted within high quality recreational areas. Major rights-of-way would be confined to the existing corridors which would positively impact and protect recreational values throughout the SRA.

The recreation needs of visitors who use the SRA would not be met by this alternative and resources in need of special management would not be afforded protection. The SRA would continue to experience an increase in visitor use as County, State, and local communities promote the recreational values of the area. This increase in use is growing in areas close to Socorro, New Mexico. Increases in user conflicts and the deterioration of the resource base may be expected if the increased demand is not met. Continuation of current management would neither address various issues such as ORV use, access, nor adequately meet growing demand for a wide range of recreation opportunities, especially close to Socorro.

Deterioration of important recreation resources would occur if areas containing highly important recreation values do not receive special management consideration. A negative impact would result for those recreationists preferring an entirely open ORV recreation opportunity. Over the long term, the majority of recreation opportunities would probably be roaded-natural in character.

#### VISUAL RESOURCES

There would be no impacts to visual resources as a result of either the land ownership adjustment, wild horse, or the coal leasing suitability issues.

Continuing current vegetative use levels could lower the scenic quality in VRM areas if vegetation is overgrazed. Also continued installation of new rangeland improvements in these areas would degrade the scenic quality over the long term. The cumulative impact of additional rangeland improvements in Class A scenic quality areas could degrade to Class B in the long term.

Not limiting motorized vehicle activity would, in the long term, reduce the overall visual quality of the SRA. Motorized vehicle activity, both authorized and unauthorized, is expected to increase in the SRA. Dispersed motorized vehicle activity would tend to shift visual resources from high scenic quality

ratings of A and B to a lower scenic quality rating of C which may increase the potential irreversible impacts (see Appendix J). This is because additional roads and trails create increased surface disturbance and modification of the visual resource.

Visual resources would be degraded in areas where new roads and trails develop (either authorized or unauthorized) over the long term. The scenic quality in Class A areas would be reduced by new roads and extended roads associated with new rangeland improvements, hunting activity, power lines, oil and gas, and general access.

The areas identified for special management in this alternative all contain management objectives for the maintenance of their scenic values. Without management protection of 286,070 acres of other important areas, visual resources would degrade from increased user pressure and development; surface disturbing activities would occur.

Existing fluid leasing stipulations will continue to protect high quality visual resource areas within the SRA.

The continued application of the existing right-of-way corridors within the SRA may have negative impacts upon visual resources as routine smaller rights-of-way would probably continue to be permitted within high quality visual resource areas. Major rights-of-way would be confined to the existing corridors which would positively impact and protect visual resource values throughout the SRA.

Deterioration and degradation of visual resource values could result through increased development in the long term, if SMAs are not identified and managed to protect scenic quality. Without management protection, visual resources in Class I and II areas, especially, would degrade from increased user pressure and development over the long term.

#### SOCIAL AND ECONOMIC CONDITIONS

Resolution of the ORV use, access, and wild horse management issues and the right-of-way exclusions and avoidance area management

concern, are not likely to impact social or economic conditions under this alternative. This should be true in both the short- and long-term situations.

Land ownership adjustments involve the disposal of approximately 61,670 acres in Catron and Socorro Counties. Using the 1986 mil levies and average payment-in-lieu of taxes (PILT) for 1985, there could be a reduction of County revenues of approximately \$2,220 annually. This is approximately .1 percent of the property tax revenues for the two counties and is not likely to have serious consequences. Some of the PILT loss would be offset by any acquisition of private and State land to Federal ownership in these counties.

Vegetative use as it relates to livestock forage is quantifiable and has a direct and immediate relationship to the social and economic well-being of a few of the SRA residents. As a result it will be the central focus of this impact analysis. Other vegetative uses include wildlife habitat and watershed improvement. These other uses are not as readily quantifiable; however, it is believed that impacts to these other uses will be minor.

Currently in the vegetative use issue area (Chupadera Mesa) eight livestock operators on 12 allotments have a preference for the use of 28,008 AUMs on public land. These BLM AUMs comprise approximately 55 percent of the total AUMs used in these eight livestock operations. For ranch budgeting purposes these eight livestock operations were divided into two groups referred to as five medium sized operations and three large operations. The medium size operations averaged 274 Animal Units (AUs) each, while the large operations averaged 951 AUs. The five medium size ranch operations are run with family labor except for a few weeks of hired labor. The three large ranchers, in addition to family labor, hire two employees each on a year-round basis, assuming families still average 4.11 persons as they did in 1980. Changes in employment on the ranches could directly affect as many as 77 people. Indirect employment effects could reach as many as 230 people. This is less than 2 percent of the SRA's population. These



operations are estimated to have the capacity to produce receipts totalling \$884,677 (see Appendix K, Table K-7), cash costs of \$590,612, and depreciation costs of \$117,371, leaving a cash return to labor, management, and capital of \$176,694 per year (these figures are in 1982 dollars). These eight operators represent about 4 percent of the 215 farms with beef cows reported in the 1982 agricultural census data for Socorro County. For the SRA as a whole these operators represent less than 2 percent of all operators with beef cows. The estimated potential of cash receipts (\$884,677) is approximately 8 percent of the 1982 cattle and calf sales reported by the Census of Agriculture for Socorro County. For the SRA the eight operators estimated receipts equal approximately 4 percent of the cattle and calf sales reported by the Census of Agriculture for Catron and Socorro Counties.

While the Taylor Grazing Act specifically states that a monetary value will not be associated with holding grazing permits, nothing has been done to prevent this from happening and the current real estate market associates an average value of approximately \$80.00 per AUM of grazing to the ranch value (Production Credit Association 1986). This influences the operators asset value and consequently his borrowing power.

The approximately 2-percent increase in BLM AUMs expected under this alternative in the long term could generate the potential for some positive impacts for the individual ranch operators and for the regional economy. The potential receipts could increase from the \$884,677 indicated in the ranch budgets to approximately \$894,000. This impact would be minimal. What is more important under this alternative is that five of the eight operators are not utilizing their full preference. Therefore, the potential \$884,677 of receipts estimated in the ranch budgets are not being achieved. Based on the 5-year average use it is estimated that the receipts are approximately \$790,000. This could reduce receipts for some of the individual operators but would not be reflected at the regional level. The operator asset value under this alternative, in the long-term, would increase

by an estimated \$44,200 and the borrowing power would increase by an estimated 60 to 70 percent of the \$44,200.

No new SMAs would be identified under this alternative; consequently, no short term social or economic impacts would occur on those areas identified for special management in other alternatives. In the long term, however, scientific, educational, and historic resources would probably decline if these social values were not protected.

Approximately 220 million tons of Federally-owned coal of known and suspected economic potential would not be available for use by local electrical generating facilities within the near future. This would tend to force utilities to continue purchasing coal from the San Juan Basin area, or more distant sources, which necessitates higher transportation costs. Opportunities to develop coal resources more efficiently would be foregone for at least the short term.

Fluid mineral leasing would continue under standard BLM leasing provisions. The potential exists for the creation of significant impacts of both a social and economic nature; however, the industry condition does not indicate that rapid development is likely. Exploration and development at levels experienced during the 1980's would not be expected to have significant social or economic impacts either in the short or long terms. Although State revenues and to a lesser extent County revenues result from oil and gas production a continuation of present procedures would not likely result in significant impacts. Economic and political influences in the minerals and energy industry make rapid changes not only possible but probable and as was stated earlier the potential exists with mineral resource development for significant impacts. Individual operational plans would be assessed for environmental impacts.

In summary, some social or economic impacts may occur with each resource use proposed under this alternative. None of these impacts would be of a magnitude to be considered consequential.

## ALTERNATIVE B - (BALANCED)

### MINERALS

Resolution of the vegetative use, access, and wild horse management issues would have no significant impact on mineral resource development.

#### Leasables

##### Oil and Gas

Under this alternative, resolution of the ORV use and coal leasing suitability issues would have no impacts on oil and gas resources development.

If all Federal lands within proposed disposal areas under the land ownership adjustment issue are disposed of as planned, 1 percent (1,400 acres) of Federal land in the "low" oil and gas potential areas, 30 percent (251,700 acres) in the "low-to-moderate" potential areas, and 78 percent (175,800 acres) in the moderate potential areas (see Table 4-2 in Alternative A) would be transferred to private or State ownership. This would result in a decrease of possible oil and gas royalties and leasing revenues to the Federal Government and possible increased restrictions and/or fees imposed by non-Federal landowners. The largest area to be affected by activities associated with this issue would be the low to moderate area in central Catron County and western Socorro County, within Shell Western Exploration and Production Incorporated (SWEPI) oil and gas development area, where the most intensive exploration activity is occurring and where it is most likely that oil and gas resources development would occur within the life of the plan (10 to 20 years). Since the BLM's mineral disposal policy would be adhered to, no foreseeable important oil and gas potential areas would be transferred from Federal ownership.

Acquisition of legal access to the southeast portion of Catron County would enhance oil and gas development possibilities.

A set of four new, more comprehensive fluid leasing stipulations (see Chapter 2 and

Appendix B) has been developed for use in the SMA prescriptions. An existing State Fluid Leasing Stipulation (NM-5, the WSMR Safety Evacuation Extension Area) was carried forward for all alternatives. Impacts associated with these fluid leasing SMA stipulations will be discussed under fluid leasing.

Table 4-9 displays how the previously mentioned stipulations affect the areas of different oil and gas resource potentials in the SRA (see Map 3-3). Based on the acreages shown in this table, it can be determined that about 54 percent of the available Federal mineral estate in the SRA is classified into three known potential categories, "low", "low-to-moderate", and "moderate". The other 46 percent of the available leasable land is in the "No Known" potential category. Of the 1,238,600 acres open to leasing in the three known categories, about 52 percent (642,500 acres) has only standard leasing provisions on it. Forty-nine percent (516,900 acres) of the land in the "No Known" potential category also has only standard leasing provisions on it. One percent of the area in the known potential categories has the "No Surface Occupancy" stipulation on it, which effectively removes this amount of land (12,000 acres) from possible oil and gas development.

The area most severely impacted by this stipulation would be the large "low-to-moderate" potential area in central Catron County and western Socorro County (SWEPI's oil and gas development area). The most intensive oil and gas exploration activity is occurring in this area and this is also the most likely area for oil and gas development to take place within the timeframe of this plan. There are eight SMAs either entirely within or infringing upon this area.

This results in an accumulation of 11,000 acres or 1 percent of the area having "No Surface Occupancy" restrictions on it. Another 1,000 acres of land under the "No Surface Occupancy" restriction is in a "low" potential area. The "low" potential area is not likely to be developed within the next twenty years; therefore this impact is considered to be negligible. Two percent (21,900 acres) of the land in the "No Known"



TABLE 4-9  
Oil and Gas Resources Affected by Fluid Leasing Decisions  
Alternative B

Fluid Leasing Decisions	Potential (in acres)				Total
	Low	Low to Moderate	Moderate	No Known	
Open to Leasing	185,600	827,200	225,800	1,066,400	2,305,000
Surface Occupancy Restricted Only by Standard Leasing Provisions	20,800	478,400	143,300	516,900	1,159,400
Surface Occupancy Restricted by:					
Required mitigation of protected resources	29,600	136,200	11,500	124,700	302,000
Management discretion	300	63,400	600	55,300	119,600
Seasonal management discretion	0	138,200	0	55,800	194,000
WSMR Extension Area	133,800	0	70,400	291,800	496,000
No Surface Occupancy Restrictions	1,000	11,000	0	21,900	34,000
Closed to Leasing *	0	0	0	0	0
Discretionary closure	0	0	0	0	0
Withdrawals	0	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.

potential category also has "No Surface Occupancy" restrictions on it; out again, since it is not likely that this "No Known" potential area would have oil and gas development on it before the expiration of this plan, this is also considered a negligible impact.

Thirty-one percent of the land (379,800 acres) in the known potential categories has BLM discretionary minor leasing restrictions on it. This would require additional planning and reclamation on the part of the companies doing the exploration or development and additional monitoring on the part of the BLM. It would make the oil and gas development more costly but should not preclude it from occurring in these restricted areas. About 22 percent (235,800 acres) of the land in the "No Known" potential category also has these minor BLM discretionary lease stipulations on it, out associated impacts are also considered negligible for the reasons noted previously for "No Known" potential areas.

Under this alternative right-of-way exclusion areas include 15,040 acres of public land in the "No Known" potential category; therefore impacts associated with this restriction are considered negligible for the same reasons noted previously.

Since the BLM's mineral disposal policy would be adhered to, no foreseeable important oil and gas potential areas would be transferred. Improved access to areas of "low-to-moderate" oil and gas potential would enhance development possibilities. The proposed fluid leasing stipulations developed for the SMA prescriptions, as applied under this alternative, except for the 11,000 acres of "No Surface Occupancy" within SWEPI's oil and gas development area (mainly Catron County), do not preclude oil and gas resources development anywhere in the SRA, but do make it more costly to accomplish this work where the stipulations are applied. Impacts to oil and gas resources development associated with the right-of-way exclusion areas under this alternative are negligible.

## Coal

Resolution of the ORV use and SMA issues and the fluid leasing management concern under this alternative would not impact coal development.

Actions taken under the land ownership adjustment issue could transfer Federally-owned coal assets to individual private owners. Approximately 40,000 acres or 93 percent of the SRA-managed, Federally-reserved coal within the Datil Mountain coal field would be considered further for disposal. In addition, approximately 96 percent or 29,000 acres of BLM-managed lands with both Federally-managed surface and subsurface would also be considered for disposal. No Federal coal lands within the Salt Lake coal field would be affected by the proposed disposals. Since the BLM's mineral disposal policy would be adhered to, no foreseeable economic coal deposits would be transferred. Some impact would be anticipated, through the loss of Federal control or future revenues, since disposal and retention decisions are routinely based on little or no nearby subsurface exploration.

Under this alternative, approximately 27,640 acres of Federally-owned coal would be made available for further consideration for leasing. This area encompasses the major strippable coal resources within the San Augustine Coal Area (SACA) with the exception of 1,040 acres of prairie falcon and golden eagle habitat declared unsuitable for further consideration under unsuitability criteria Nos. 12 and 13 and multiple-use screen No. 3. This could eventually make available approximately 85 million tons of potentially strippable coal and 125 million tons of potentially underground minable coal reserves (see Appendix M for definitions of strippable and underground minable coal reserves) which in conjunction with State and private sources, would be sufficient to support two typical large western strip mine operations. Actions under this issue would provide economic sources of coal within the SRA and reduce the



distance needed to transport coal to Arizona power plants. This would enhance coal development within the Southwest by making resources available in a new geographic region.

Approximately 13 percent of the Federal lands being carried forward for further consideration for leasing would be subject to right-of-way avoidance. Although this may restrict some support activities, the impacts to coal development are assumed to be negligible.

Although some unforeseen future coal revenues and Federal control of economic coal resources may be foregone due to land disposals, the overall actions would substantially enhance coal development activities within the short term. Coal development would also be enhanced in adjacent State and private lands which may have difficulty supporting efficient, competitive mines independently.

#### Geothermal

Under this alternative, resolution of the ORV use and coal leasing suitability issues would have no impacts on geothermal resources development in the SRA.

Under this alternative, land ownership adjustment actions could affect up to 18 percent (33,000 acres) of the Federally-managed mineral estate in the "low" potential category and up to 65 percent (20,000 acres) of the land in the "moderate" potential category [the Socorro Known Geothermal Resource Area (KGRA)]. If this amount of land is transferred out of Federal ownership, there would be a potential loss of geothermal leasing revenue and royalties to the Federal government and possibly increased restrictions and/or fees on geothermal resources exploration and development imposed by non-Federal landowners. Since the BLM's mineral disposal policy would be adhered to, however, no foreseeably important geothermal potential areas would be transferred out of Federal ownership.

Acquisition of additional legal access under this alternative to the area around Socorro and the designated Socorro KGRA would enhance geothermal development possibilities.

With respect to the fluid leasing stipulations, 3 percent (5,800 acres) of the area in the "low" geothermal potential zone has the "No Surface Occupancy" stipulation on it, taking this much land out of possible geothermal development. This could result in loss of leasing and royalty revenues in this area for the Federal Government. Table 4-10 displays how the fluid leasing stipulations affect areas of different geothermal resources potentials. Under this alternative, there is only one small area (300 acres) in the Socorro KGRA that has a minor BLM-discretionary stipulation applied to it, but the impact from this restriction to the development of the geothermal resources in this "low-to-moderate" potential zone is considered negligible. Twenty-nine percent (52,500 acres) of the total Federal land available for leasing that has "low" geothermal potential is affected by these fluid leasing stipulations, but since it is highly unlikely that these "low" potential areas would be developed for geothermal resources within the timeframe of this plan (20 years), these impacts are considered negligible.

Under this alternative right-of-way exclusion areas involve 15,040 acres, and are located outside of the "low" geothermal potential area. They would not impact geothermal resource development.

Since the BLM's mineral disposal policy would be adhered to, no foreseeable important geothermal potential areas would be transferred. Improved access to the Socorro KGRA would enhance development possibilities. The proposed fluid leasing stipulations developed under this alternative would not affect geothermal resource development. The right-of-way exclusion areas planned under this alternative are located outside of the "low" geothermal potential area and would not impact geothermal resource development.

#### Locatable

Resolution of the coal leasing suitability issue and the fluid leasing management concern would have no impacts on locatable mineral development.

TABLE 4-10  
Geothermal Resources Affected by Fluid Leasing Decisions  
Alternative B

Fluid Leasing Decisions	Potential (in acres)			Total
	Low	Moderate	No Known	
Open to Leasing	180,600	31,000	2,093,500	2,305,100
Surface Occupancy Restricted Only by Standard Leasing Provisions	128,080	30,700	1,001,300	1,160,100
Surface Occupancy Restricted by:				
Required mitigation of protected resources	24,000	320	277,700	302,000
Management discretion	4,200	0	115,400	119,600
Seasonal management discretion	2,500	0	191,400	194,000
WSMR Extension Area	16,000	0	480,000	496,000
No Surface Occupancy Restrictions	5,800	0	28,200	34,000
Closed to Leasing *	0	0	0	0
Discretionary closure	0	0	0	0
Withdrawals	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.



Proposed actions under the land ownership adjustment issue could potentially transfer approximately 32 percent of the moderate to high mineral potential areas for locatable minerals from the SRA's administration (see Table 4-2). Impacts primarily involve the possible loss of Federal control over mineral availability within the Cat Mountain, Datil-Pie Town, Iron Mountain, Lemitar Mountain, Rayo, Scholle, and Socorro Mountain known mineral resource areas. Possible impacts would be primarily associated with the reduced availability of precious metal, base metal, and uraniferous resources. Existing mining claims and the BLM's mineral estate disposal policy would support the retention of significant mineral resources and thus would ensure that impacts to mineral development under this issue would be minor.

ORV closures would affect approximately 15,000 acres of areas identified as having moderate to high potential for locatable minerals. Impacts of closures are associated with restricted availability since a plan of operations must be approved prior to conducting all non-casual mineral exploration or development activities in closed areas, however, impacts from these restrictions should be negligible. Although the Ladrone area contains substantial mineral potential, no significant impacts are anticipated as a result of this closure.

In addition to closures, broad areas of limited ORV use would be designated. As noted under Alternative A, these limited areas are only of minor restriction.

Decisions under the access issue may tend to make mineral resource areas in the eastern and southcentral portions of the SRA more accessible. Access to mineral resource areas in various parts of U.S. Forest Service (FS) administered lands may also improve.

Several SMAs have been proposed under this alternative which restrict or eliminate locatable mineral operations. Withdrawals against mineral entry are proposed for six SMAs affecting about 1,900 acres. These withdrawals only affect approximately one-tenth of a percent of all areas of

moderate to high potential for locatable minerals currently under the SRA's administration. In addition to the above withdrawals, approximately 17,000 acres of land within moderate to high locatable mineral potential areas are proposed to be designated as ACECs. An approved plan of operations is required for ACECs before non-casual activities may proceed.

As under Alternative A, impacts to locatable minerals as a result of right-of-way exclusion areas are inconsequential.

Assuming that all mineral resources with significant mineral potential would be retained, overall impacts to locatable mineral resource development would be essentially the same as under Alternative A.

#### Saleable

##### Material Sales

Resolution of the ORV use issue and the fluid leasing and right-of-way avoidance area management concern would have no significant impacts on saleable mineral development.

Decisions under the land ownership adjustment issue may dispose of 9 percent of the SRA-managed construction aggregate resources of moderate to high potential. This includes 7 percent of the moderate to high potential aggregate resources occurring on lands entirely managed by the BLM (see Table 4-6).

Proposed land disposals could potentially limit the availability of construction aggregates within the vicinity of Socorro and Magdalena areas. Areas of substantial potential for commercial sand and gravel lie within the land disposal area along the Rio Grande Valley. Since it is recognized that construction aggregates will be necessary to support highway construction and the anticipated growth in the Socorro area, the BLM's mineral disposal policy would promote the retention of all foreseeable economic aggregate sources. It is anticipated that limited land disposals within the Socorro area would tend to enhance demand for construction aggregates by creating opportunities for land development.

Management prescriptions for 19 of the SMAs would restrict mineral material development in approximately 112,500 acres of Federal mineral estate. This represents approximately 5 percent of the mineral estate managed by the SRA. Only 10 percent of the restricted areas contain the potential material sources shown on Map 3-5 and resources in these restricted areas are not expected to be under demand within the foreseeable future, no significant impacts are anticipated under this issue.

Decisions to further consider areas north of Quemado for coal leasing could result in the enhancement of mineral material development. Concrete aggregates, surfacing materials, ballast, and fill would be necessary for production facilities, roads, railroads, and earth works associated with coal development.

Only positive impacts to mineral material development would be expected either locally or regionally under this alternative. The proposed action would only restrict an additional .5 percent of the SRA-managed Federal mineral estate from mineral material development. Overall, actions taken under this alternative would tend to enhance mineral material development.

#### RANGELAND

Resolution of the access and wild horse management issues and the right-of-way avoidance management concern would have no impact on rangeland resources.

Under the land ownership adjustment issue, 100,320 acres are identified for disposal. A loss of approximately 15,050 AUMs of grazing use with revenues totaling \$20,310 per year from grazing fees would result. Other impacts concerning disposal by exchange are similar to those described under Alternative A.

There are currently 28,008 AUMs authorized for livestock within the Chupadera Mesa area. An additional 1,940 AUMs are expected under this alternative through the implementation of the management actions prescribed under Appendix C, and the Livestock Grazing Management Section of Chapter 2. These actions can aid in improving 15,000 acres of rangeland in fair ecological condition.

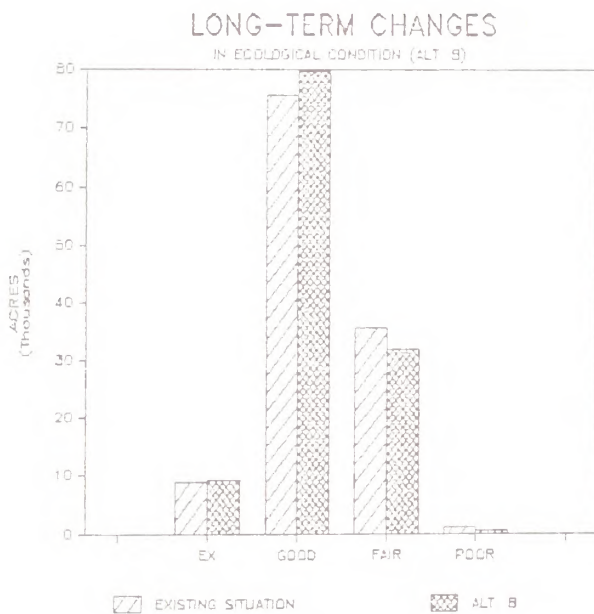
Management of these allotments appears to be satisfactory. AMPs may be developed on seven allotments. The level of intensity, however, would vary depending on the objectives outlined for the allotment. This would be handled during the consultation phase of the process. The management actions suggested for the allotments would be designed to minimize or reduce the existing minor problems of uneven livestock distribution, weed control, and shortage of permanent water. A long-term increase in improved quality and quantity of forage from the improved distribution and vigor would result. It is anticipated that 2,270 AUMs would result from the management actions proposed. For the benefit of wildlife an additional 330 AUMs would be allocated. The additional vegetation would also benefit watershed habitat. The remaining 1,910 AUMs would go to livestock; however, depending on the circumstances, further allocations would be made to wildlife. These would be handled on a case-by-case basis.

Approximately 21 miles of pipeline, 29 miles of fence and 1 well are identified for construction under this alternative. The impacts from rangeland improvements are similar to those described under Alternative A. Total disturbance from the above activities is approximately 30 acres.

Manipulation of vegetation would increase quantity and improve the quality of livestock forage. Vegetative land treatments are proposed on 164,000 acres of public land. A description of the types of vegetative land treatments proposed, their effects and standard operating procedures is provided in Appendix C. Of the 164,000 acres, 4,100 acres are within the Chupadera Mesa area, 80,000 within the East Socorro ES area, and 80,000 within the Nogal Habitat Management Plan (HMP) area. A short-term reduction in vegetation and a long-term increase in forage can be expected. The impacts from vegetative land treatments are similar to those described under Alternative A. Figure 4-2 illustrates the expected long-term changes in ecological condition (excellent, good, fair, and poor) for the Chupadera Mesa area.



Figure 4-2



Under this alternative ORV use would be closed on 36 miles of road, open on 679,970 acres, limited on 668,200, and seasonally limited on 67,400. Impacts are similar to those described under Alternative A.

Exclusion of livestock grazing would occur on the following SMAs: Ladron - close to domestic sheep and close allotment No. 1152 to any grazing; Pelona and Horse Mountain - close to domestic sheep and goats; Fort Craig, Teypama, Playa Pueblos, and Mogollon Pueblo - close to grazing. Impacts from these actions are considered to be minor. Currently, domestic sheep and goats are not licensed to graze within the area. The elimination of grazing from the other SMAs would result in a loss of 10 AUMs.

The management prescriptions identified in the Ladron, Sawtooth, Rio Salado, San Pedro, Iron Mine Ridge and Taylor Canyon SMAs specifically benefit or protect T&E plant habitat. Other SMAs such as Soaptree and Harvey Plot would protect the natural scenic values of the area.

The SMAs with tighter restrictions would have less impacts on the vegetation than those with lighter restrictions. Impacts from ORV use, woodcutters, geophysical operations, mineral

material sales, and other activities would vary by the restrictions placed.

If surface mining activities occur, a loss of approximately 5,800 acres of native vegetation and 1,440 AUMs of livestock forage on public land would result. In addition, 4 miles of fence, and 2 reservoirs would be destroyed. Two allottees would be affected by the loss of forage. Loss of vegetation is only temporary. The area would be reclaimed with former grazing levels and improvements restored.

Impacts from fluid leasing on vegetation would be similar to those described under Continuing Management Guidance and Actions. The proposed fluid leasing stipulations would be implemented to protect sensitive resources.

In summary it is estimated that an additional 2,270 AUMs would become available from this alternative to benefit livestock, wildlife, and other resources on Chupadera Mesa. Short-term impacts from rangeland improvements and vegetative land treatments would be temporary and minor as to the benefits (i.e., increased vigor, production, and ecological condition) derived in the long term.

Short-term disturbance is expected from coal leasing from the initial construction. However, long-term increases and improvements in vegetation can be expected from proper seeding and reclamation.

Unavoidable adverse impacts resulting from this alternative include: 1) vegetation disturbance on 30 acres from new rangeland improvements, 2) vegetation disturbance from fluid leasing activities, 3) vegetation disturbance from vegetative land treatments, and 4) 5,800 acres of vegetation lost due to surface mining.

Under this alternative an irreversible/irretrievable loss of vegetation would occur on 30 acres where new rangeland improvements are constructed, areas where fluid leasing activities occur, areas where vegetative land treatments are conducted (approximately 6,000 acres per year) and on 5,800 acres where surface mining operations would occur.

A loss of approximately 1,440 AUMs would be irretrievably lost annually for the life of the rangeland improvements and surface mining operations.

#### Threatened or Endangered Species (Plants)

Areas containing T&E or sensitive species have been identified under this alternative within various SMAs. Efforts to protect and improve habitat will be made.

#### WILD HORSES

Resolution of the vegetative use, access, SMAs, and coal leasing suitability issues and the fluid leasing and right-of-way avoidance management concerns would have no impact on the wild horses under this alternative.

Resolution of the land ownership adjustment issue would have a positive affect on the wild horse program. Approximately 2,700 acres of non-Federal land could be acquired under this alternative to "block up" the Federal lands, improving the manageability of the herd. The WHMA is located within a retention block.

The impacts caused by resolution of the ORV issue would be the same as those described under Alternative A.

Under this alternative wild horse herd numbers would be increased to 50 head and managed over the long term at that level. Impacts would not differ significantly from those under Alternative A. Inventories conducted from 1982-85 showed population levels to average 40 to 65 head, with the average utilization of forage being 35 percent. No significant conflicts with livestock and wildlife have been identified.

The increased number of wild horses may present a problem to the allottee. Interior fences exist on the WHMA, which may be knocked down by the horses, allowing the livestock to enter into other pastures.

Impacts regarding the control and management of the wild horses are the same as described under Alternative A.

The BLM would continue to meet its responsibility under the Wild Horse and Burro Act of 1971. Management goals and objectives regarding the multiple resources would be met. An average herd size of 50 wild horses would be maintained over the long term. The condition of wild horses would improve as a result of culling and the introducing of new bloodlines, which would increase the adoption demand.

Unavoidable adverse impacts are the same as in the Continuing Management Guidance and Actions.

#### LANDS

Resolution of the vegetative use, ORV, access, wild horses, and coal leasing issues would have no impact on the lands program under the balanced alternative.

Resolution of the land ownership issue would impact the lands program in that approximately 100,320 acres of public land located in disposal blocks throughout the SRA would be disposed of by sale or exchange over the long term. Primarily the BLM would divest itself of its interests in the northern portion of Chupadera Mesa, the Rio Grande Valley and north of U.S. Highway 60 from Magdalena to Pie Town. These actions would allow BLM to dispose of difficult-to-manage public lands and would afford the State of New Mexico and private individuals the opportunity to acquire these lands for their specific interests. Table 4-7 summarizes in general terms the primary impacts expected to occur with the disposal of these lands.

As part of this alternative the BLM would pursue the acquisition of approximately 81,200 acres of private and State land to enhance other resource programs. Although these specifically-identified acres for acquisition are all within SMAs, the SRA would also pursue the acquisition, as a second priority, of other nonpublic lands within the identified retention blocks in an attempt to consolidate BLM land holdings. In the long term consolidation of the public lands would significantly improve management efficiency, effectiveness, and costs while improving the



BLM's ability to manage wildlife habitat, recreation, cultural resources, and other resource programs. Split estate resource management would continue to be a negative impact.

Further anticipated impacts associated with the acquisition of nonpublic lands can be seen on Table 4-8. Since these land ownership adjustments should be considered as a long-term project to last the entire life of the RMP, the associated impacts should be fairly unnoticeable at first yet should accumulate over time.

Resolution of the SMA issue would affect the lands program, primarily through the acquisition of approximately 81,200 acres of nonpublic lands within 10 separate SMAs. The anticipated impacts associated with these acquisitions have been discussed in greater detail under the land ownership adjustment issue.

Various levels of fluid leasing would undoubtedly create the necessity to process varying amounts of realty actions; however, fluid leasing in of itself would have no direct effect upon the lands resource.

Under the balanced alternative, rights-of-way would be totally excluded on approximately 15,040 acres of public land within the SRA. The excluded lands which correspond with VRM Class I areas and areas which contain known Federally-listed T&E plant species account for approximately 1 percent of the SRA's surface estate. Since a large portion of these 15,040 acres are located on Ladron Peak, communication facilities would not be authorized on the mountain top.

In addition, approximately 383,752 acres of public land would be subject to right-of-way restrictions of some type. In addition, all VRM Class II areas and all SMAs, with the exception of Sawtooth and the Divide Tin, would be within right-of-way avoidance areas. This restriction applies to approximately 25 percent of the SRA, which could make right-of-way construction more expensive and difficult for utility companies. Utility routes may require more deviations and thus

require longer rights-of-way which would increase the amount of surface disturbance. On the other hand, special resource values would be protected and utility companies should find it easier to identify which areas should be avoided during the project design phase.

In summary, under this alternative approximately 100,320 acres of public land would be disposed of and approximately 81,200 acres of specifically-identified nonpublic land would be acquired to assist in the management of other resource programs. As a second priority, nonpublic lands would be acquired within retention blocks to further enhance other BLM resource programs. Right-of-way placement would be totally excluded from 15,040 acres of public land and would be restricted on an additional 383,752 acres of BLM land.

#### FORESTRY

Resolution of the ORV use and wild horse issues under this alternative would not impact the forestry resource.

The disposal of 100,320 acres (if the lands support forest or woodlands) would reduce the acres available for management. If the lands acquired (81,200 acres) have forest or woodlands growing on them, it would increase acres available for management of fuelwood, posts, etc.

The vegetative uses issue under this alternative would not generally affect the forestry program in the SRA. However, the vegetative land treatments would affect the forestry resources if pinyon-juniper woodlands are involved. Any acres treated would reduce the base for woodland management. If the treated area contained woodlands and were opened for salvage of the materials, a temporary increase in woodland products would become available. Eventually the forestry resources on these areas would be exhausted and the total acreage for woodland management would be reduced.

Additional access supports the forest and woodlands program but loss of access would be

detrimental to the program. Access would be affected either positively or negatively by the disposal or acquisition of lands.

Under this alternative, the SMA issue would impact 78,070 acres of forestry resources. These impacts would consist of closing areas to woodcutting and/or plant sales, and limiting wildfire suppression. These impacts would result in removing areas from management of fuelwood, posts, decorative plants, etc.

Approximately 3,500 BLM surface acres of forest or woodland areas could be impacted under this alternative by carrying forward 27,640 acres within the high potential coal area for future leasing. These impacts would consist of destruction and/or alteration of the forestry resource. Eventually, the forestry resource on these areas would be exhausted and the total acreage for woodland management would be reduced.

Under this alternative the fluid leasing management concern could impact the forestry resource. If production occurs, efforts should be taken to minimize, protect, or salvage vegetative materials.

Right-of-way exclusion areas totalling 15,040 acres and right-of-way avoidance areas totalling 383,752 acres would protect those forest resources which occur within these areas.

#### SOILS/WATER RESOURCES

The wild horse issue would have no impact to the soils/water resources under this alternative.

Under this alternative, 100,320 acres could be transferred out of BLM administration. This action could also result in long-term investments in soil improvement and erosion control structures being transferred out of Federal ownership. If the structures are maintained by the party or agency acquiring the lands, no impact to the soils resource would occur. If the structures are not maintained, sediment and salt loads to lower basin users would increase.

In acquiring 81,200 acres of non-public lands for SMAs, there would be increased opportunities to bring critical watersheds under BLM management. This would allow the BLM to apply reclamation stabilization measures to these lands for the benefit of the watersheds involved. As discussed under the SMA issue, this favorable situation (integrating erosion control measures in larger blocks) is offset to some degree by restrictions on surface disturbance stabilization measures for the lands. Overall, this alternative would have a positive impact in reducing soil erosion and improving surface water quality.

Under this alternative vegetative cover and patterns of grazing use would improve to reduce soil erosion and gully establishment in the Chupadera area. Vegetative treatments would result in an initial short-term erosional loss until vegetation is reestablished. Over the long term treatment would result in decreased sediment and salt yields on 184,170 acres.

Limiting ORV use to existing roads and trails on 668,200 acres and closing (reclaiming) 36 miles of unnecessary roads would stabilize or reduce active soil erosion and gully establishment over the long term. Since many of the limited areas are within critical watersheds, reduced salt and sediment yields over the entire SRA should result. Much of the area remaining open under this alternative is relatively stable.

Acquiring access into presently inaccessible lands or areas where only physical access exists would provide opportunities in some critical areas for more intensive management treatments. This, coupled with closing and rehabilitating undesirable routes, would reduce or stabilize treated areas.

Under this alternative, soil and watershed protection would be enhanced on 29 SMAs, totalling 286,070 acres. The degree of protection would vary with the prescription for each SMA. However, designation of the SMAs in all cases would involve some restriction of vehicular, mineral, right-of-way, timber, or grazing use. These



restrictions reduce the amount of surface disturbance, which reduces erosion and generally results in stable or improved watershed conditions. However, in some of the SMAs active erosion conditions such as gully headcutting, piping, and sheet erosion would continue.

In some of the SMA areas, prescriptions are such that severe restrictions of non-surface disturbance or occupancy would limit the BLM's ability to correct an active erosion problem effectively. This could, over the long term, increase the growth and action of active gully systems in erosion areas. Three areas which have potential impacts are the North Sierra Ladrones, Aqua Fria, and Rio Salado SMAs.

Soils and watershed systems could be disturbed and disrupted on portions of 27,640 acres carried forward for further coal leasing. Groundwater quantity and quality could be impacted through aquifer disruption. Impacts to soil resources would include soil profile destruction and surface drainage alteration. Specific impacts would be evaluated prior to actual leasing as a result of tract delineation in a Regional EIS or lease by application.

Fluid leasing impacts under this alternative would be similar to Alternative A except greatly reduced since occupancy limitations or restrictions would apply on some SMAs and critical erosion areas. This, coupled with timing restrictions, would reduce soil erosion impacts, gully establishment, and advancement; and over the long term reduce impacts to watersheds on 1,145,000 acres.

As with fluid leasing 15,040 acres of exclusion and 383,752 acres of avoidance areas would reduce the direct and indirect impacts from rights-of-way on the soils/water resources.

Some increased loss of soil and sediment production would be expected should any structures be located on the 100,320 acres recommended for disposal.

In summary overall land ownership adjustments could reduce soil erosional losses and improve

surface water quality on 81,200 acres of lands within the proposed SMAs.

Vegetative uses and treatments would improve cover conditions resulting in reduced sediment production and gully development. This would be on Chupadera Mesa area and the East Socorro Grazing ES area proposed treatments (184,170 acres).

ORV use limited to existing roads and trails and the closing of 36 miles of roads would stabilize soil and watershed conditions on 668,200 acres.

Conditions proposed for SMAs would maintain or improve soil and watershed conditions on portions of 286,070 acres.

Soil, surface water, and groundwater could be impacted on parts of 27,640 acres carried forward for coal leasing. Fluid leasing impacts to soils and water resources would be reduced on 1,145,000 acres of land through lease restrictions.

Similarly impacts from rights-of-way would be reduced overall through 15,040 acres of exclusion and 383,752 acres of avoidance areas.

#### AIR QUALITY

Impacts caused by resolution of issues and management concerns under this alternative would not differ greatly from those described in any of the proposed RMP alternatives. The decreased quality of the air as a result of coal development, the productive oil and gas fields, and the nature of the arid ecological conditions is inherent. Environmental compliance on a case-by-case basis for those proposals that may affect air quality is designed to reduce the chance of adverse impacts. The result of high-level energy production and processing would increase the probability of localized, short-term adverse impacts due to variables such as atmospheric drainage, weather patterns, winds, and level of emissions.

In general, resolution of issues and management concerns proposed under this alternative are not expected to impact air

quality. It is probable that localized areas may suffer short-term degradation of existing air quality due to the cumulative effects of emissions.

#### WILDLIFE

The land ownership adjustment issue under this alternative would authorize the disposal of 100,320 acres of public lands and the acquisition of 81,200 acres of nonpublic lands. The disposal of the 100,320 acres of public land is not expected to impact the wildlife resource because these lands are isolated, scattered, difficult to manage, and have received little if any special management. It is expected that the lands identified for disposal would continue to be managed and utilized in the same manner after the ownership change as they have in the past.

The acquisition of the 81,200 acres of nonpublic lands would be in support of the proposed SMAs in an effort to consolidate the Federal lands. These acquisitions could be very beneficial to the wildlife resource if higher-quality wildlife habitat is obtained.

Under this alternative for the vegetative uses issue, the authorized grazing use would be increased by 2,270 AUMs. This forage increase would be allocated to wildlife and watershed first (330 AUMs) and the rest to livestock.

Vegetative treatments can improve existing habitat conditions, especially in areas where wildlife ranges exist. Use of herbicides could cause adverse impacts in pronghorn habitats where forbs comprise a major component of their diet. This could be mitigated by plowing portions of treatment areas which increases forage production.

As discussed in Alternative A, food habitat studies conducted in the SRA have shown that there is considerable dietary overlap between wildlife and livestock. Extremes in weather, such as drought, can create severe forage competition. Season-of-use adjustments would help in reducing potential conflicts.

All new rangeland improvements are viewed as positive impacts to the wildlife program as

they would be designed to benefit the wildlife resource in accordance with BLM design standards.

ORV use, under this alternative, would be limited to existing roads and trails on 668,200 acres and seasonally limited to existing roads and trails on an additional 67,400 acres. These limitations would reduce wildlife harassment, improve habitat privacy, and decrease soil and vegetation disturbance within the wildlife use areas.

The remaining 679,970 acres of public lands within the SRA would be designated open for ORV use; however, due to the remote locations of these areas, this action is not expected to be of consequence to the wildlife resource.

Under this alternative for the access issue, the acquisition of legal access on the existing physical access routes would not impact the wildlife resource.

As physical and legal access is expanded into previously inaccessible areas, however, habitat privacy would deteriorate and harassment to wildlife would increase. This could result in the existing usable habitats being greatly reduced in size and/or made completely unusable for wildlife.

The closure and rehabilitation of existing undesirable vehicle routes would improve species privacy, and decrease wildlife harassment.

The management prescriptions identified in the Ladron Mountain, Pelona Mountain, Aqua Fria, Horse Mountain, Walnut Canyon, and San Lorenzo Canyon SMAs specifically benefit or protect wildlife habitats. Most of the remaining SMAs would be managed in a manner which would also benefit the wildlife habitats but to a lesser extent. This alternative provides adequate habitat protection and habitat improvement for 286,070 acres of wildlife habitat.

Resolution of the wild horse issue under this alternative would allow the wild horse herd to increase from 32 head to 50 head. This would result in increased competition for habitat and available forage between the wild horses and wildlife.



Under this alternative, the coal leasing suitability/assessment issue would carry forward for future leasing 27,640 acres of Federal minerals. This acreage is the result of applying the unsuitability criterion 11, 12, and 13 to the maximum coal development potential area.

Presently, there would not be any direct impacts to the wildlife resource as a result of carrying this acreage forward into the Federal coal activity planning process.

The environmental analyses conducted during the activity planning and permitting process would address all site-specific impacts resulting from coal development. It should be noted that additional inventory data analysis for raptor nests, etc., could require a reapplication of the unsuitability criteria and multiple-use screens during the activity planning process.

Under this alternative the fluid leasing management concern could (if production occurs) impact 7,000 acres of bald eagle habitat, 87,000 acres of pronghorn habitat, 1,110 acres of raptor habitat, and 11,500 acres of potential bighorn sheep habitat. These impacts would be the result of the above listed special resources not being adequately protected within the existing fluid leasing stipulations. However, as the existing oil and gas leases expire, the above listed acreages would be reduced since the new fluid leasing stipulations become effective with all new leases.

The amount of impact to the wildlife resource from the fluid leasing management concern would directly correlate to the timing and amount of production.

Under this alternative, 15,040 acres of important wildlife habitat would be protected by excluding any future right-of-way development and 383,752 acres of wildlife habitat would be protected by avoiding these areas during future right-of-way development. The results of excluding and avoiding these acreages from any future right-of-way development would be the maintenance of habitat privacy and the prevention of habitat destruction within important wildlife habitats.

The implementation of this alternative would result in both short-term and long-term changes in the wildlife resource (i.e., habitats and populations). The major short-term impact would consist of habitat privacy intrusions during crucial periods of the year (i.e., fawning seasons, nesting seasons, and etc.). The short-term impact of implementing this alternative would be the direct result of the physical aspects of construction of rangeland improvements and various leases, permits, and rights-of-way, ORV use, various other recreational activities, geophysical exploration activities and possible oil and gas production-related activities.

The major long-term impact of implementing this alternative would consist of destruction and/or alteration of various habitats which would render the effected habitats and some adjoining habitats as unsuitable for various wildlife species. These long-term impacts would be the result of the same activities as were listed above for the short-term impacts out would also include land disposals.

#### Threatened or Endangered Species (Animals)

There are no impacts to listed T&E animal species under this alternative.

#### CULTURAL RESOURCES

Resolution of the wild horse issue would not affect cultural resources.

As discussed under Alternative A, the land ownership adjustment issue would be managed in accordance with laws, regulations, and specific guidance designed to ensure no adverse effect upon the resources.

Vegetative uses, primarily related to livestock grazing, produce a continuous, low-level effect upon cultural resources as a result of cattle trampling, rubbing, etc., in the area of archeological sites. The continuation of the SRA Patrol and Surveillance Plan and the proposed SRA 10-percent sample survey would help monitor site condition and identify localities where disproportionate livestock disturbance may

occur and require administrative actions such as exclosures. No adverse effect upon Carbon 14 dating capabilities as a result of vegetative treatments (herbicides) have been documented. Laboratories conducting Carbon 14 dating, however, recommend documentation of areas treated, as a means of evaluating future recovered dates. These would be recorded under all alternatives.

Effects of ORV use are discussed under Alternative A. Under this alternative, about half of the SRA would be designated "open" and about half "limited to existing roads and trails." For protection against random adverse effects for vehicle travel, the latter is preferred, but this can also make legitimate scientific excavation of remote sites logistically quite difficult, as special permits would be required to access these sites. As with damage from livestock grazing, problem areas resulting from ORV travel can be identified and managed through administrative measures.

Under this alternative, access to important public interpretative archeological sites would be pursued, which would be beneficial to the goals of the cultural resource program.

SMAs under this alternative would be increased for the protection of cultural resources. In addition to four sites presently managed under CRMPs, new SMAs and cultural components of multi-resource SMAs would be created. Ladrón Mountain, Pelona Mountain, Cerro Pomo, and Rio Salado SMAs contain cultural components as part of their basis for special management. The Newton Site, Playa Pueblos, Town of Riley, Mogollon Pueblo, Mockingbird Gap, and Zuni Salt Lake would be established as new SMAs specifically for their cultural values. This would provide an extra measure of management protection for presently known, especially significant sites.

Coal leasing suitability assessment would go forward for the entire area of maximum coal development potential with the provision that sites on the 1,340 acres identified under the cultural resource screen would be mitigated. Class III Inventories and appropriate mitigation measures would be required in all presently unsurveyed areas. Sufficient

safeguards of laws and regulations exist to ensure that no adverse effects result.

Under this alternative, the management concern of fluid mineral leasing would incorporate special stipulations which afford an added measure of protection for cultural sites. This would be a positive influence upon the management of both archeological and socio-cultural sites.

The management concern of right-of-way exclusion and avoidance areas would be resolved under this alternative partially through limitations and exclusions of rights-of-way in cultural SMAs, which would be beneficial to the affected sites.

In summary, management approaches to issues and management concerns under this alternative would result in improvements in many areas of cultural resource management. Land ownership adjustments, vegetative uses, ORV use, and coal leasing may result in an over-all increase in irreversible commitments of cultural resources through scientific mitigation, but would be accomplished in compliance with all applicable laws and regulations to result in no adverse effects. Access to important public sites, increased SMAs, fluid mineral leasing stipulations, and right-of-way exclusions/avoidances would improve management of cultural resources.

#### PALEONTOLOGY

Management practices under this alternative would have negligible effects upon paleontological resources. Coal leasing would occur in the maximum coal development potential area, which is viewed as a short-term beneficial effect by many paleontologists because of the scientific data which would be recovered through inventories and exposure of possibly fossiliferous strata. This balances the negative impacts due to destruction of fossils by mining activities.

#### RECREATION/OFF-ROAD VEHICLES

Resolution of the vegetative use, wild horse, and coal leasing issues would not impact recreation resources.



The acquisition of approximately 81,200 acres of non-public lands within SMAs would be a high management priority. Acquisition of these lands would be beneficial in enhancing recreation management and improving additional lands with high value recreation resources.

Within this alternative, 785,010 acres would be designated open; 668,200 acres limited to existing roads and trails; 67,400 acres seasonally limited from November through March; and 36 miles of trails closed to ORV use (see Map 2-7). As a result of these designations, semi-primitive, non-motorized, and semi-primitive motorized recreation opportunities would be enhanced or maintained in closed and limited ORV areas. Open areas would allow greater recreational access and establish general locations where more intensive or permitted motorized use could be directed.

The impacts of access on recreational resources would, in general, favor conservation-oriented resource programs, except that access tract A would be a higher priority than access tract B. Recreational access is a concern in both access tracts A and B.

Identifying and managing 13 recreation-related SMAs would greatly protect the recreational resources. The 13 SMAs include the Ladron Mountain, Pelona Mountain, Aqua Fria, Cerro Pomo, Soaptree, Horse Mountain, Tinajas, Fort Craig, Continental Divide National Scenic Trail, Datil Well Campground, Walnut Canyon, The Box, and San Lorenzo Canyon. Surface disturbance, which could degrade recreational opportunities, would primarily result from mineral exploration/development, rangeland improvements, and geophysical exploration.

Under this alternative, the fluid leasing management concern could (if extensive exploration and production occurs) impact recreational resources. These resources are primarily found within the SMAs, but include other areas such as Devil's Backbone, Jornada del Muerto, and the Sierra Larga. Restrictions on fluid leasing would be applied within SMAs which would afford some protection of recreation resources. However, few

closures or no surface occupancy exclusions would be applied to the SMAs, leading to the potential for surface disturbing activities to occur. The amount of impact would directly correlate to the amount of production.

Some protection would be afforded to the recreation resources within 13 recreation-related SMAs as these areas would be avoided when new rights-of-way are established. Recreation resources in the remainder of the SRA with semi-primitive motorized and roaded natural opportunities would be degraded as various types of rights-of-way are established. The level of impact is directly related to the number and type of right-of-way development.

In summary, the implementation of this alternative would result in short- and long-term changes in recreation resources. The major short-term impact would be the direct result of the physical aspects of construction of rangeland improvements, rights-of-way, energy and mineral exploration and development, and various surface disturbing activities. The major long-term impact would consist of the degradation of recreation resources in semi-primitive motorized areas outside SMAs. These long-term impacts would be the result of the same activities listed above for short-term impacts.

#### VISUAL RESOURCES

Resolution of the vegetative use, access, wild horse, and coal leasing issues would not impact visual resources.

The acquisition of non-public lands within SMAs would protect the high scenic quality of these areas. Disposal of scattered isolated blocks of BLM lands and the consolidation of other BLM lands would improve visual resource management.

ORV designations in this alternative would generally maintain or enhance scenic values as the majority of VRM Class I and Class II areas would be closed or limited to ORV use. Some degradation of visual resources would occur as new access routes are created by hunters and other recreationists.

The impacts of managing 30 SMAs would enhance scenic quality. The level of impact is directly related to the number and type of surface disturbance; i.e., roads, fences, and wells. Generally, scenic values in VRM Class I and Class II areas would be maintained on 249,620 acres of public land.

Under this alternative, the fluid leasing management concern could impact visual resources if extensive exploration and development occurred. The primary impact would be to VRM Class II areas outside SMAs. Some protection is afforded Class I and Class II areas within SMAs; however, allowing surface occupancy for oil and gas development, geophysical exploration and new rights-of-way could degrade the scenic quality of these areas.

Under this alternative, VRM Class I lands would be protected while rights-of-way would be excluded.

In summary, the major short-term impact to scenic quality would be the direct result of the physical aspects of surface disturbing activities such as mineral material sales, rights-of-way, geophysical exploration, mineral exploration, rangeland improvements, and ORV use. Long-term impacts would occur as a result of permanent structures being added to the landscape and various types of surface disturbing activities. Some degradation of Class II lands within SMAs could occur if surface disturbing activities such as oil and gas exploration and developments, mineral material sales, and rights-of-way are authorized.

#### SOCIAL AND ECONOMIC CONDITIONS

The ORV use, access, and wild horse management issues along with the right-of-way avoidance management concern are not likely to have social or economic impacts under this alternative.

Land ownership adjustments involve the disposal of approximately 100,320 acres in Catron and Socorro Counties. Using 1986 mill levies and average PILT for 1985, there could be a reduction of County revenues of

approximately \$9,600 annually. This is approximately .5 percent of the property tax revenues for the two counties and is not likely to have serious consequences. Some of the PILT loss would be offset by any acquisition of private land to Federal ownership in these counties.

Vegetative use under this alternative shows approximately a 6.9-percent increase in livestock grazing preference. It is estimated that the potential ranch receipts would increase to approximately \$918,500 from the current estimate of \$884,677. This would be a significant positive change for the affected operators, but would not be significant from the regional economic view. These additional 1,940 livestock AUMs, based on the market value of \$80.00, would add approximately \$155,200 to the asset value of the effected livestock operators and would increase their borrowing power by about 60 to 70 percent of this increased asset value. While data is not adequate for specific analysis of watershed and wildlife vegetative use, it is assumed that the magnitude of social and economic impacts would be minimal.

The proposed SMAs would result in short term, positive social impacts with no change in economic values. In the long term, impacts would be positive due to the preservation of social values and could be positive for economic values. For example, an area managed for recreation could have positive economic benefits resulting from increased recreational use and tourism.

Coal leasing suitability assessment does not indicate mining specific volumes of coal and, therefore, does not provide for specific data for either social or economic analysis. An estimate of community impacts or opportunities foregone can be derived by looking at figures used in the San Juan River Regional Coal EIS. It was estimated for that EIS that as many as 300 jobs may result from surface mining one million tons of coal per year. If these jobs paid an average of \$17,000 per year, the annual payroll would be over \$5,000,000. A 10-percent change in employment or income has been used as a bench mark to determine if an impact is significant. If this level of



change is considered significant and if the January 1987 employment figure (5,865) for the SRA is used, there would have to be a 2,000,000 ton per year mining operation to bring about a 10-percent employment change. The personal income for the SRA in 1984 was reported by the Bureau of Economic Analysis (BEA) at \$116,220,000. If the 10-percent change is considered to be the level at which a change becomes significant and if the previous assumption is correct that a million tons of coal mining would generate \$5,000,000 of wages, then a mining operation of just over 2,000,000 tons per year would be required to be considered significant. Another factor that affects the level of significance is that the location of the potential coal mining is such that all impacts would not remain within the SRA; and as the area broadens, the magnitude of the impacts on any given area would be reduced. Considering coal tracts for further consideration for leasing would not have significant social or economic impacts in the SRA. Further environmental analysis would be given to tracts that are sought for leasing and mining.

Fluid mineral leasing would continue with the addition of a few specific stipulations added to the BLM's standard leasing provisions. The potential exists for the creation of impacts of both a social and economic nature if rapid oil and gas development were to take place. However, the industry condition does not indicate that rapid development is likely. Exploration and development at levels experienced during the 1980's would not be expected to impact social or economic conditions either in the short or long terms. Although State revenues and to a lesser extent County revenues result from oil and gas production, continuation of present procedures with the added stipulations would result in little change from the present situation.

Rapid oil and gas development could result in positive impacts on revenues. The specific level of impact would depend on volume of production and price at the specific time.

In summary, some minor social or economic impacts may occur under this alternative. However, economic conditions in the energy

industry could cause minerals development to reach levels that could become significant. No irreversible or irretrievable social or economic impacts are expected under this alternative.

## ALTERNATIVE C - (RESOURCE CONSERVATION)

### MINERALS

Resolution of the vegetative use, access, and wild horse management issues would have no impact on mineral resource development.

#### Leasables

##### Oil and Gas

Under this alternative, resolution of the ORV use and coal leasing suitability issues would have no impacts on oil and gas resource development.

Under this alternative, land ownership adjustment could affect up to 1 percent (1,800 acres) of Federal land having "low" oil and gas potential, 16 percent (131,800 acres) in the "low to moderate" potential area, and up to 62 percent (140,000 acres) of Federal land having "moderate" oil and gas potential. This is very close to the percentages noted in Alternative B, so impacts would be similar. The most notable difference between Alternative C and Alternative B is in how much land is affected in SWEPI's oil and gas development area in Catron and Socorro Counties. Table 4-2 displays these differences of affected acreages under each alternative for the various potential categories. Under this alternative, only 16 percent (131,800 acres) of the "low-to-moderate" area (SWEPI's oil and gas development area) is planned for disposal. This area has the best possibility of oil and gas development within the timeframe of this plan; consequently, the probability of oil and gas leasing and royalty revenue losses to the Federal Government is reduced under this alternative compared to Alternatives B and D. There is also a 16-percent reduction (35,200 acres) of planned disposal of land in the "moderate" potential areas, so similar reduction of impacts would be anticipated. As

noted previously, only 1 percent of the "low" potential area is planned for disposal, but, as in Alternative B, disposals in the "low" potential areas can be considered to have negligible impacts. Additionally, since BLM's mineral disposal policy would be adhered to, no foreseeable important oil and gas potential areas would be transferred from Federal ownership.

Proposed acquisition of legal access, under this alternative, to the southeastern portion of Catron County could enhance oil and gas development possibilities in this area.

As noted previously in Alternative B, four new fluid leasing stipulations and one existing fluid leasing stipulation are to be used in the SMA prescriptions set up in this document.

Table 4-11 shows how many acres in each oil and gas potential category are affected by the fluid leasing stipulations. As noted in Alternative B, the most likely areas to be developed for oil and gas within the timeframe of this plan (20 years) are the "low-to-moderate" areas that are mainly in Catron County (SWEPI's development area) and the "moderate" areas in the northwestern and northeastern parts of Socorro County (although the areas other than SWEPI's development area are less likely to be developed). The "low" and "No Known" potential areas are highly unlikely to be developed within the next 20 years. For this reason, further discussion of the impacts will be limited to the "low-to-moderate" and "moderate" areas. Under this alternative, the most restrictive stipulation, the "No Surface Occupancy" restriction, has been applied to about 24 percent (178,700 acres) of the total available land in the "low-to-moderate" potential area and about 2 percent (4,800 acres) of the "moderate" category. Additionally, another 68,500 acres (about 8 percent) of the "low-to-moderate" land has been completely closed to fluid leasing. This is the only alternative under consideration that has land actually closed to fluid leasing, although the "No Surface Occupancy" stipulation accomplishes practically the same effect under Alternative B. This makes a total of about 247,200 acres, or about 32 percent of the land

most likely to be developed for oil and gas within the timeframe of this plan, not open to oil and gas activities. This could have significant impact in the form of reduced oil and gas leasing and royalty revenues to the Federal Government. This could tend to discourage potential oil and gas developers from doing any future work in the SRA. Under this alternative, there is also an additional 14 percent (106,900 acres) of land in the "low-to-moderate" areas and 5 percent (11,200 acres) of land in the "moderate" areas that are subject to minor BLM-discretionary stipulations. These minor stipulations do not preclude oil and gas development in the areas to which they are applied; but, because of the additional planning and reclamation required, oil and gas development would be more costly to the energy companies. There are about 620,700 acres (28 percent) of land in the "moderate" areas subject to the WSMR Safety Evacuation stipulations but the evacuations are short termed and infrequent, so impacts from this restriction should be minimal.

Another concern for oil and gas development under this alternative is the two large right-of-way exclusion areas in Catron County that are in or infringe upon the "low-to-moderate" potential area. According to the criteria for these right-of-way exclusion areas, no permanent facilities structures can be constructed in these exclusion areas. No access or service roads could be constructed, and no pipelines or pump-stations could be built in these areas. No rights-of-way would be allowed within these areas to support oil and gas development unless they were within actual lands under oil and gas leases. This could cause some hindrance to oil and gas development since utility and access routes may have to follow circuitous routes.

In summary, for this alternative, assuming that significant mineral resources would be retained, land ownership adjustments would have no impacts on oil and gas. Impacts are increased, however, in these same areas by the fluid leasing stipulations (the "No Surface Occupancy" and "Closed to Leasing" Stipulations) and the planned right-of-way exclusion areas. The amount of land in the "low-to-moderate" category, to which the "No



TABLE 4-11  
Oil and Gas Resources Affected by Fluid Leasing Decisions  
Alternative C

Fluid Leasing Decisions	Potential (in acres)				Total
	Low	Low to Moderate	Moderate	No Known	
Open to Leasing	185,600	748,700	225,900	1,070,500	2,230,700
Surface Occupancy Restricted Only by Standard Leasing Provisions	20,500	463,100	147,200	617,600	1,248,400
Surface Occupancy Restricted by:					
Required mitigation of protected resources	0	0	0	0	0
Management discretion	19,200	1,900	11,200	56,500	88,800
Seasonal management discretion	0	105,000	0	29,100	134,100
WSMR Extension Area	115,800	0	62,700	148,400	326,900
No Surface Occupancy Restrictions	30,100	178,700	4,800	218,900	432,500
Closed to Leasing *	0	68,500	0	5,800	74,300
Discretionary closure	0	68,500	0	5,800	74,300
Withdrawals	0	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.

Surface Occupancy" restriction has been applied, has increased to about 22 percent under Alternative C. The increase is only from 1 percent in Alternative B to 2 percent in Alternative C in the "moderate" areas. One of the biggest differences between Alternative B and Alternative C is that about 8 percent of the land in the "low-to-moderate" area is "Closed to Leasing" under Alternative C. Alternative B does not have any "Closed to Leasing" restrictions in it. Overall, Alternative C is more restrictive to oil and gas resource development than Alternative B.

#### Coal

Resolution of the ORV use issue and the fluid leasing management concern under this alternative have no impacts on coal development.

Although actions taken under the land ownership adjustment issue could encumber future coal development and result in the transfer of public assets of substantial future value to individual private owners, they would not be as severe as actions taken under Alternative B. Approximately 31,000 acres or 72 percent of the SRA-managed, Federally-reserved coal within the Datil Mountain coal field would be considered for disposal. In addition, 6 percent of the BLM-managed lands with both Federally-owned surface and subsurface would be considered for disposal. No Federal coal lands within the Salt Lake coal field would be affected by the proposed disposals. Some impacts to coal development would be anticipated to occur over the long term.

Under this alternative approximately 26,460 acres of Federal coal would be made available for further consideration for leasing. This area encompasses the major strippable coal resources within SACA with the exception of 1,040 acres of raptor habitat (Criteria Nos. 12 and 13) and 1,340 acres that have been eliminated by application of multiple-use screens (Multiple-Use Screen No. 3). This could eventually make approximately 78 million tons of potentially strippable coal and 124 million tons of potentially underground minable coal available for leasing. Actions

under this issue are only slightly less beneficial to coal development than those under Alternative B.

Approximately 13 percent of the Federal lands being carried forth for further consideration for leasing would be subject to right-of-way exclusion. No rights-of-way would be allowed within this area to support coal development unless they were on lands under coal lease. This could cause some hinderance to coal development since utility and access routes may have to follow circuitous routes.

Overall, negative impacts to coal development in the long term could occur through reduction of lands available for coal leasing consideration, but short-term enhancements associated with coal leasing would be only slightly less than under Alternative B.

#### Geothermal

Under this alternative, resolution of the ORV use and coal leasing suitability issues would have no impacts on geothermal resources development.

Under this alternative, the lands planned for disposal in the "low" potential category and the "moderate" potential (the Socorro KGRA) area are the same as that in Alternative B, so the impacts would be the same as far as this issue is concerned. Again, since the BLM's mineral disposal policy would be adhered to, no foreseeable important geothermal potential areas would be transferred.

Proposed acquisition of additional legal access under this alternative to the area around the Socorro KGRA would enhance geothermal development possibilities.

Table 4-12 displays how each geothermal potential area is affected by the proposed fluid leasing stipulations. The most restrictive stipulation "No Surface Occupancy," is applied to about 17 percent (29,900 acres) of the "low" potential area under this Alternative. This compares to only about 11 percent (5,800 acres) of the "low" potential areas subject to this same stipulation under Alternative B.



TABLE 4-12  
Geothermal Resources Affected by Fluid Leasing Decisions  
Alternative C

Fluid Leasing Decisions	Potential (in acres)			Total
	Low	Moderate	No Known	
Open to Leasing	177,700	31,000	2,093,400	2,302,100
Surface Occupancy Restricted Only by Standard Leasing Provisions	136,300	30,700	1,076,100	1,243,100
Surface Occupancy Restricted by:				
Required mitigation of protected resources	0	0	0	0
Management discretion	1,100	300	83,600	85,000
Seasonal management discretion	0	0	134,000	134,000
WSMR Extension Area	10,400	0	314,600	325,000
No Surface Occupancy Restrictions	29,900	0	485,100	515,000
Closed to Leasing *	2,900	0	0	2,900
Discretionary closure	2,900	0	0	2,900
Withdrawals	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.

Additionally, about 1 percent (320 acres) of the "moderate" potential area (the Socorro KGRA) is subject to minor BLM-discretionary stipulations. These limitations and restrictions would not preclude this land from geothermal leasing, but it may make it more costly to do resource development in these areas because of the additional planning and reclamation that would be required. About 2 percent (2,900 acres) in the "low" potential area is planned to be completely "closed to leasing," resulting in a proportionate reduction in potential geothermal leasing and royalty revenue to the Federal Government. This makes a total of about 19 percent (32,800 acres) of the "low" geothermal potential area that is either severely restrictive to resource development or even completely unavailable for geothermal leasing under this alternative.

The right-of-way exclusion areas planned under this alternative affect about 15 to 20 percent of the "low" geothermal potential land. This means that any structures or pipelines that may be needed for geothermal resource development that are not on geothermal leases would have to be built or installed outside of these exclusion areas. None of the exclusion areas are within the Socorro KGRA, however, which is the most feasible area for geothermal development within the timeframe of this plan. The right-of-way exclusion areas would probably have negligible impacts on the geothermal development.

In summary, then, under this alternative the land to be disposed of under the land ownership adjustment issue within the Socorro KGRA is the same as Alternative B; therefore, impacts would be the same. Since BLM's mineral disposal policy would be adhered to, no foreseeable important geothermal potential areas would be transferred. Proposed acquisition of additional legal access into the KGRA would enhance geothermal development possibilities. Under this alternative, a total of about 17 percent of the "low" geothermal potential area is subject to the "No Surface Occupancy" stipulation. Additionally, about 1 percent of the "moderate" geothermal potential area (the Socorro KGRA) is subject to minor

BLM-discretionary stipulations. These restrictions will not preclude the affected areas from geothermal leasing. It may be more costly to do geothermal exploration and development in these areas because of the additional planning that would be required. Another 2 percent (2,900 acres) in the "low" potential area is to be completely closed to leasing," resulting in a proportionate reduction in potential geothermal leasing and royalty revenue to the Federal Government. The right-of-way exclusion areas planned under this alternative do not infringe upon the Socorro KGRA area, which is the most likely area to have geothermal development on it within the timeframe of this plan. These exclusion areas would probably have negligible impacts on geothermal exploration and development for the life of this plan.

#### Locatables

Resolution of the coal leasing issue and the fluid leasing management concerns would have no impacts on locatable mineral development.

Proposed actions under the land ownership adjustment issue could potentially transfer approximately 28 percent of the moderate to high mineral potential areas for locatable minerals from the SRA's administration (see Table 4-5). Impacts primarily involve the possible loss of Federal control over mineral availability within the Datil-Pie Town, Lemitar Mountain, Rayo, Scholle, and Socorro Mountain known mineral resource areas. Possible impacts would be primarily associated with the availability of precious metal, base metal and uraniferous resources. It is anticipated that existing mining claims and the BLM's mineral estate disposal policy would ensure that areas with foreseeable economic mineral potential would be retained resulting in minor impacts to locatable mineral resource development.

ORV closures would affect approximately 25,000 acres of area identified as having moderate to high potential for locatable minerals. Prospectors and developers are required to secure an approved plan of operations prior to executing noncasual activities within areas closed to ORV use. Impacts to locatable



mineral resource development resulting from the proposed closures and limitations would be minor. Access to mineral resource areas in the eastern and south-central portion of the SRA may improve as a result of decisions under the access issue.

Several SMAs have been proposed under this alternative which restrict or eliminate locatable mineral operations. Withdrawals against mineral entry are proposed for 15 of the SMAs affecting approximately 26,000 acres. This represents approximately 1 percent of the entire mineral estate or 4 percent of the moderate to high locatable mineral resources currently under the SRA's administration.

In addition approximately 160,000 acres would be subject to ACEC designations. This would cause restrictions on approximately 7 percent of areas of moderate to high mineral potential administered by the SRA.

As under Alternative A and B, impacts to locatable minerals as a result of right-of-way exclusion areas are inconsequential.

As shown on Table 4-5 about 6 percent of the Federal mineral estate or 12 percent of the known locatable mineral resource areas managed by the SRA would be removed from entry. In addition, approximately 8 percent of the areas of known locatable mineral resource potential would be moderately to severely restricted. It is anticipated that implementation of this alternative would create substantial restrictions on locatable mineral exploration and development.

#### Saleables

##### Material Sales

Resolution of the discretionary actions concerning the ORV use issue and the fluid leasing management concerns proposed under this alternative have no impacts on saleable mineral developments.

Decisions under the land ownership adjustment issue may dispose of 7 percent of the SRA-managed construction aggregate resources

of moderate to high potential. This includes approximately 4 percent of the moderate to high aggregate resources occurring on BLM lands. These proposed disposals should have a negligible impact on the supply of saleable minerals (see Table 4-6). The availability of Federal construction aggregates would only be potentially restricted along U.S. 60 from Magdalena eastward for approximately 10 miles.

Management prescriptions for 19 SMAs, covering approximately 112,500 acres of Federal minerals, would exclude mineral material disposals. Due to the remote location of the majority of these areas which have been excluded and the minimal amount of identified saleable resources effected, no significant adverse effect to mineral material development would be anticipated.

Although some coal resources would not be brought forward for further consideration for leasing, the volume that would be brought forth would require a quantity of supporting mineral materials similar to that anticipated under Alternative B. Thus enhancements to coal development would be essentially identical to those identified under Alternative B.

Proposed right-of-way exclusion areas would cause minor impacts on mineral material development as a result of restricted access and limitations on projects which require construction materials.

Overall, only minor impacts to the existing and future supply of mineral materials would be anticipated under this alternative. Enhancements to mineral material development would be only slightly less than those identified under Alternative B.

##### RANGELAND

Resolution of the access and wild horse management issues and the right-of-way management concern would have no impact on the rangeland resources under this alternative.

Under the land ownership adjustment issue, 39,040 acres are identified for disposal. This would amount to a loss of approximately

5,860 AUMs of grazing use with revenues totaling \$7,900 per year from grazing fees. Other effects from this action are similar to those identified under Alternative A.

There are currently 28,008 AUMs authorized for livestock in the Chupadera Mesa area. Under this alternative 2,500 AUMs of livestock grazing use would be placed in suspended nonuse and reserved for enhancement of wildlife and watershed resources. Any increases in vegetation from management activities would be allocated to wildlife, with no increase to livestock. The loss of 2,500 AUMs would adversely affect many of the permittees, reducing their annual net income and the worth of their ranch.

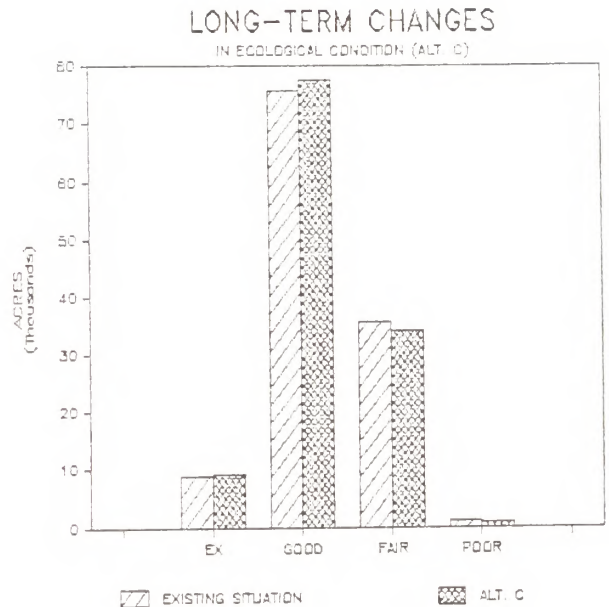
AMPs would be developed on four allotments to benefit wildlife and watershed resources. The level of intensity would be dependent upon allotment objectives. The implementation of the management actions described in Appendix C and under Grazing Management in Chapter 2 would help accomplish these objectives.

Impacts from rangeland improvements would be similar to those described under Alternative A, with the exception that wildlife and watershed are the primary beneficiaries of improved livestock distribution and improved vegetation conditions.

Approximately 25 miles of pipeline and one well are identified for construction under this alternative. Total disturbance of the vegetation resource is approximately 30 acres.

Vegetative land treatments are proposed on 1,550 acres in the Chupadera Mesa area and 80,000 acres in the East Socorro ES area under the Nogal HMP. An increase of 1,590 AUMs in the long term from management and vegetative land treatments in Chupadera Mesa would be allocated to wildlife. Impacts from vegetative land treatments are similar to those described under Alternative A. Figure 4-3 illustrates the expected long-term changes in ecological condition (excellent, good, fair, and poor) for the Chupadera Mesa area.

FIGURE 4-3



Under this alternative ORV use would be closed on 248,300 acres, open on 585,700 acres and limited on 581,570 acres. Impacts are similar to those described under Alternative A.

Impacts from the resolution of the SMA issue would be similar to those described under Alternative B, except under this alternative, heavier restrictions would be placed on the SMAs. The type of restriction would vary the degree of impact on the vegetation.

The management prescriptions identified in the Ladrón, Sawtooth, Rio Salado, Sand Pedro, Iron Mine Ridge and Taylor Canyon SMAs specifically benefit or protect T&E plant habitat. Other SMAs such as Soaptree and Harvey Plot would protect the natural scenic values of the area.

Under this alternative approximately 4,460 acres of native vegetation and 1,110 AUMs of livestock forage on public land would be removed if surface coal mining activities were to occur. In addition, 4 miles of fence and two reservoirs would be destroyed. One allottee would be affected by the loss of



forage. Impacts are similar to those described under Alternative B.

Fluid leasing impacts on the vegetative resource are similar to those identified under Continuing Management Guidance and Actions. Heavier restrictions under this alternative would benefit the vegetation and the T&E species. SMAs identify sensitive plant species.

In summary, in the Chupadera Mesa area it is estimated that there would be a reduction of 2,500 AUMs from the current 28,008 AUMs of authorized use. Short-term impacts can be expected from rangeland improvements and vegetative land treatments. However, the long-term benefits such as increased vigor, production, and ecological condition would override the short-term impacts. A reduction in grazing use would be detrimental to the livestock operators, reducing the size of their herds, but wildlife and watershed would benefit greatly.

Unavoidable adverse impacts are similar to those identified in Alternative B, with the following exception: suspended grazing preference would reduce the number of livestock permitted to graze on public lands.

Irreversible and irretrievable commitment of resources are similar to those in Alternative B.

#### Threatened or Endangered Species (Plants)

No treatments would occur in the area containing rare, endemic, T&E plant species.

#### WILD HORSES

Resolution of the vegetative use, access, SMAs and coal leasing suitability issues and fluid leasing and right-of-way avoidance area management concerns would have no impact on the wild horses under this alternative.

Impacts caused by the resolution of the land ownership issue would be the same as described under Alternative B.

Impacts caused by the resolution of the ORV issue would be the same as those described for Alternative A.

Under this alternative the wild horse herd would increase to 179 horses over the long term, the full capacity of the WHMA. Interior fences would be removed so as not to restrict the movement of the wild horses.

The increase to full capacity may potentially increase the problem of horses knocking down fences, thus, getting out of the WHMA and into surrounding allotments. BLM would then have to round up the horses and move them back into the WHMA.

The increase to 179 horses would result in the transfer of 2,148 AUMs from cattle to horses on the part of the Bordo Atravesado Allotment, No. 1254, existing within the WHMA. This could severely impact the allottee financially, as he would either have to sell his livestock or find a place to lease.

The larger wild horse herd would increase BLM's involvement in the management of the herd. This would be primarily through the development and maintenance of waters and other improvements.

The physical characteristics and genetic makeup of the wild horses would improve as a result of culling and introducing new bloodlines. This would increase adoption demand.

The WHMA would increase to 179 horses, full capacity over the long term. The general characteristics of the wild horses would improve as well as their being more adoptable. Potential problems exist with keeping the horses confined to the WHMA, as well as the severe financial impact on the allottee.

Unavoidable adverse impacts are the same as in Continuing Management Guidance and Actions.

#### LANDS

Resolution of the vegetative use, access, wild horse, and coal leasing issues and the fluid leasing management concern would have no impact on the lands programs under this alternative.

The land ownership issue would impact the lands program in that approximately 39,040

acres of public land located in disposal blocks throughout the SRA would be disposed of by sale or exchange over the long term. Primarily, public lands located between the Sevilleta Land Grant and Chupadera Mesa would be disposed of as would those north of U.S. Highway 60 between Socorro and Magdalena. These actions would allow BLM to dispose of difficult to manage public lands and would afford the State of New Mexico and private individuals the opportunity to acquire these lands for their specific interests. Table 4-7 summarizes in general terms the primary impacts expected to occur with the disposal of these lands.

As part of this alternative the BLM would pursue the acquisition of approximately 51,500 acres of private and State lands to enhance conservation-oriented resource programs. Although these specifically identified acres for acquisition are all within SMAs, the SRA would also pursue, as a second priority, other nonpublic lands within the identified retention blocks in an attempt to consolidate BLM land holdings. These consolidating activities would over the long term improve the efficiency and effectiveness of management of the public lands within the SRA.

Further anticipated impacts associated with the acquisition of nonpublic lands can be seen on Table 4-8. These land ownership adjustments should be considered as a long-term project to last the entire life of the RMP.

Under this alternative the ORV issue would impact the lands program only in the sense that land-use authorizations may be somewhat more restrictive as 248,300 acres of public land would be closed to ORV use, and 581,540 acres would limit ORV use to existing roads and trails. Although it is not unusual to authorize a new right-of-way or lease within an ORV limited area, the survey and design may be complicated by the limited designation. The issuance of more short-term permits would be necessary to allow applicants the opportunity to survey and design new rights-of-way within these limited areas.

Resolution of the SMA issue would affect the lands program primarily through the

acquisition of approximately 51,500 acres of nonpublic lands within 11 separate SMAs. The anticipated impacts associated with these acquisitions are discussed in greater detail above under the land ownership adjustment issue.

Rights-of-way would be totally excluded on over one-fourth of the SRA under this alternative, as 398,832 acres of public land located within SMAs and VRM Class I and Class II areas would be unavailable for new right-of-way developments. Furthermore, approximately 14,740 additional acres of public land within critical watershed areas which are outside SMAs would be restricted to many types of right-of-way uses. These designations could make right-of-way construction more difficult and expensive for the utility companies. Utility routes may deviate more and therefore require longer rights-of-way, thus increasing the amount of surface disturbance. On the other hand, special resource values would be protected from development and the utility companies should find it easier to identify which areas must be avoided during the project design phase.

In summary, under the conservation alternative, approximately 39,040 acres of public land would be disposed of and approximately 51,500 acres of specifically identified nonpublic land would be acquired to assist in the management of conservation-oriented resource programs. As a second priority, nonpublic lands would be acquired within retention blocks to further enhance other BLM resource programs. Right-of-Way placement would be totally excluded from 398,832 acres of public land and would be restricted on an additional 14,740 acres.

#### FORESTRY

Resolution of the ORV use and wild horse issues under this alternative would have no impacts on the forestry resource.

The disposal of 39,040 acres (if the lands support forest or woodlands) would reduce the acres available for management. If the lands acquired (51,500 acres) have forest or woodlands growing on them, it would increase



acres available for management of fuelwood, posts, etc.

The vegetative uses issue under this alternative would not generally affect the forestry program in the SRA. However, the vegetative land treatments would affect the forestry resources if pinyon-juniper woodlands are involved. Any acres treated would reduce the base for woodland management. If the treated area contained woodlands and were opened up for salvage of the materials, a temporary increase in woodland products would become available. Eventually the forestry resources on these areas would be exhausted and the total acreage for woodland management would be reduced.

Additional access supports the forest and woodlands program but loss of access would be detrimental to the program. Access would be affected either positively or negatively by the disposal or acquisition of lands.

Under the SMA issue, 78,070 acres of forestry resources would be impacted. These impacts would consist of closing areas to woodcutting and/or plant sales, and limiting wildfire suppression. These administrative actions would result in removing areas from management of fuelwood, posts, decorative plants, etc.

Some forest or woodland areas could be impacted under this alternative by carrying forward 26,460 acres within the high potential coal area for future leasing. These impacts would consist of destruction and/or alteration of the forestry resource. Eventually, the forestry resource on these areas would be exhausted and the total acreage for woodland management would be reduced.

Under this alternative the fluid leasing management concern could impact the forestry resource. If production occurs, efforts should be taken to minimize, protect, or salvage vegetative material.

Right-of-way exclusion areas totalling 398,832 acres and right-of-way avoidance areas totalling 14,740 acres would protect those forest resources which occur within these areas.

## SOILS/WATER RESOURCES

The wild horse issue would have no impacts under this alternative.

Under this alternative, 39,040 acres could be transferred out of BLM administration. This action would also result in some long-term soil improvement and erosion control structures being transferred. If the structures are maintained by the party or agency acquiring the lands, no impact to the soils resource would occur. If the structures are not maintained, sediment and salt loads to lower basin users would increase.

In acquiring 51,500 acres of nonpublic lands in SMAs there would be increased opportunities to bring critical watersheds under BLM management. This would allow the BLM to apply reclamation stabilization measures to these lands for the benefit of the watersheds involved. As discussed under the SMA issue, this favorable situation (integrating erosion control measures in larger blocks) is further enhanced to some degree by reclamation restrictions on stabilization measures for the lands. Overall, this alternative would have a positive impact in reducing soil erosion and improving surface water quality.

This alternative would increase the cover on some critical watersheds through additional forage allocation to watershed uses. Rangeland improvements geared to watershed would improve the patterns of use in the low-lands where gullies are eroding. Overall, this would decrease erosion on soils and reduce sediment in surface waters. Vegetative treatments on 81,550 acres in the Chupadera Mesa and East Socorro ES areas would further reduce soil losses and increase stability over the long term, after an initial increase in erosion.

Limiting ORV use to existing roads and trails on 581,570 acres and closing ORV use on 248,300 acres would reduce soil erosion and limit the establishment of new gullies on the acreage due to no new trail establishment.

Limiting the acquisition of legal access to existing physical access as a priority would

potentially force the use of improperly located roads. This would require extensive reconstruction or maintenance in highly erosive soils and active gullies. It would result in increased erosion and accelerated gully development. This continued loss of soil to wind and water constitutes an irretrievable loss. Closing and rehabilitating undesirable existing roads would reduce gully establishment, mitigation, and soil erosion in general.

Under this alternative, soil and watershed protection would be enhanced on 29 SMAs, totalling 286,070 acres. The degree of protection would vary with the prescription for each SMA. However, all the SMAs would involve some restriction of vehicular, mineral, right-of-way, timber, or grazing use. These restrictions reduce the amount of surface disturbance, which in turn reduces erosion and generally results in stable or improved watershed conditions.

Some of the SMAs, however, are identified in areas which have current active erosion conditions such as active gully headcutting, piping, and sheet erosion. In these areas prescriptions which severely restrict surface disturbance or occupancy would in turn affect the BLM's ability to correct the problem efficiently and effectively. This would over the long term increase the growth and action of active gully systems and erosional areas. Three primary areas that would be potentially impacted are the northern portion of the Sierra Ladrones, Aqua Fria, and Rio Salado SMAs.

Soils and watershed systems would be disturbed on portions of 26,460 acres carried forward for further coal leasing. Groundwater quantity and quality could be impacted. Specific impacts would be evaluated prior to actual leasing as a result of tract delineation in a Regional EIS or lease by application.

Fluid leasing impacts under this alternative would be similar to Alternative A except greatly reduced since occupancy limitations would apply on some SMAs and critical erosion areas. This, coupled with timing restrictions

and no lease areas, would reduce soil erosion and gully establishment and advancement over the long term and reduce impacts to watershed on 729,700 acres.

Under this alternative 398,832 acres of exclusion and 14,740 acres of avoidance areas would reduce the direct and indirect impacts from rights-of-way on the soils/water resources.

In summary, overall land ownership adjustments could reduce soil erosional losses and improve surface water quality on 51,500 acres of lands adjacent to proposed SMAs.

Some increased loss of soil and sediment production would be expected should any structures be located on 39,040 acres identified for disposal.

Vegetative uses and treatments would improve cover conditions resulting in reduced sediment production and gully development.

ORV use limited to existing roads and trails (581,540 acres) and the closing of 248,000 acres would reduce impacts to soils and water resources on 829,840 acres.

Prescriptions proposed for SMAs would maintain or improve soil and watershed conditions on portions of 286,070 acres.

Soil, surface water, and groundwater could be impacted on parts of 26,460 acres carried forward for coal leasing.

Fluid leasing impacts to soils and water resources would be reduced on 729,700 acres of land through lease restrictions and no leasing.

Similarly, erosional impacts from rights-of-way would be reduced overall through 398,832 acres of exclusion and 14,740 acres of avoidance areas.

#### AIR QUALITY

Impacts caused by resolution of issues and management concerns under this alternative would not differ greatly from those described in Alternative A. The proposed actions of



minimal coal leasing in the strippable coal belt and less oil and gas developed in certain SMAs would not measurably affect air quality. Current management guidance is to analyze the impacts of proposed actions which may affect air quality and mitigate those effects through the environmental compliance process.

In summary, some improvement in air quality may be expected above that described in Alternative A; however, it is not expected to change substantially.

#### WILDLIFE

The land ownership adjustment issue under this alternative would authorize the disposal of 39,040 acres of public lands and the acquisition of 51,500 acres of nonpublic lands. The disposal of this 39,040 acres of public land is not expected to have an impact on the wildlife resource because these lands are isolated, scattered, difficult to manage, and have received little, if any, special management. It is expected that the lands identified for disposal would continue to be managed and utilized in the same manner after the ownership change as they have in the past.

The acquisition of the 51,500 acres of nonpublic lands would be in support of the proposed SMAs (see Appendix L for the management objectives and prescriptions) in an effort to consolidate the Federal lands. These acquisitions could be very beneficial to the wildlife resource if higher-quality wildlife habitat is obtained.

The reallocation of 2,500 AUMs from livestock to wildlife would increase available forage for wild ungulates and cover for small mammal and bird species. It is anticipated that the majority of the allotments identified for reallocation would demonstrate habitat improvement as reflected in wildlife population numbers, species diversity and/or overall population health and stability.

As discussed in Alternative A, food habitat studies conducted in the SRA have shown that there is considerable dietary overlap between wildlife and livestock. Extremes in weather, such as drought, can create severe forage

competition. Season-of-use adjustments would help in reducing potential conflicts.

Vegetative manipulations can improve existing wildlife habitat and watershed by 3,440 AUMs. Use of herbicides could cause adverse impacts in pronghorn habitats where forbs comprise a major component of their diet. This could be mitigated by plowing portions of treatment areas and thus creating new forbs. Impacts of vegetative treatments would be similar to those in Alternative A. Also, all new rangeland improvements would be designed to benefit the wildlife resource.

Limiting ORV use to existing roads and trails and/or closing certain SMAs on 829,840 acres would reduce wildlife harassment and improve species privacy throughout the SRA.

Under this alternative, the acquisition of legal access on the existing physical access routes would not impact the wildlife resource. However, the closure and rehabilitation of existing undesirable vehicle routes consisting of 36 miles would improve wildlife species privacy.

The management prescriptions identified in the Ladron Mountain, Pelona Mountain, Aqua Fria, Horse Mountain, Walnut Canyon, and San Lorenzo Canyon SMAs specifically benefit or protect wildlife habitats. Most of the remaining SMAs would be managed in a manner which would also benefit the wildlife habitats but to a lesser extent. This alternative would increase protective measures through ACEC designation on most of these SMAs and would help to improve 286,070 acres of wildlife habitat.

Resolution of the wild horse issue under this alternative would result in negative impacts to the wildlife resource. The wild horses would be allowed to increase to their full carrying capacity of 179 animals (2,148 AUMs). This would result in increased competition for habitat and available forage between the wild horses and wildlife.

Under this alternative, the coal leasing suitability/assessment issue would carry forward for future leasing 26,460 acres of Federal coal. This acreage is the result of

applying the unsuitability criteria to the maximum coal development potential area.

Presently, there would not be any direct impacts to the wildlife resource as a result of carrying this acreage forward into the Federal coal activity planning process. Environmental analyses prepared during the activity planning and permitting process would address all site-specific impacts resulting from coal development. It should be noted that additional inventory data analysis for raptor nests, etc., could require reapplication of the unsuitability criteria and multiple-use screens during the activity planning process.

Under this alternative the fluid leasing management concern could (if production occurs) impact 7,000 acres of bald eagle habitat, 87,000 acres of pronghorn habitat, 1,110 acres of raptor habitat, and 11,500 acres of potential bighorn sheep habitat. These impacts would be the result of the above listed special resources not being adequately protected within the existing fluid leasing stipulations. However, as the existing oil and gas leases expire, the above listed acreages would be reduced as the new fluid leasing stipulations become effective with new oil and gas leases. The amount of impact to the wildlife resource from the fluid leasing management concern would directly correlate to the timing and amount of production.

Under this alternative, 398,832 acres of important wildlife habitat would be protected by excluding any future right-of-way development. The result of excluding this acreage from any future right-of-way development would be the maintenance of habitat privacy and the prevention of habitat destruction within imported wildlife habitats.

The implementation of this alternative would result in both short- and long-term changes in the wildlife resource.

The major short-term impacts would consist of species privacy intrusions during crucial periods of the year (i.e., fawning seasons, nesting seasons, etc.) and increased competition between wild horses and wildlife.

Both short- and long-term impacts of implementing this alternative would consist of the destruction and/or alteration of various habitats and the increased competition between wild horses and wildlife.

#### Threatened or Endangered Species (Animals)

There are no impacts to any T&E animal species under this alternative.

#### CULTURAL RESOURCES

Management of the wild horse issue under this alternative would not impact cultural resources.

This is the only alternative under which land acquisitions exceed land disposals and, to the extent that this would bring presently unprotected cultural resources under Federal protection, this would be a beneficial aspect of the land ownership adjustment issue.

The change in AUMs under the vegetative use issue is too small to have a positive impact through reduction of livestock disturbance.

ORV limitations and closures under this alternative should reduce random disturbance of sites through inadvertent tire damage, and reduce vandalism by limiting access to remote sites. However, the latter often limits or precludes legitimate scientific investigations which became logistically unfeasible, and so, is a mixed effect.

Under this alternative, access to important public interpretive archeological sites would be pursued, which would be beneficial to the goals of the cultural resource program.

SMAs under this alternative would provide management measures for the same sites discussed under Alternative B and would benefit some of the more important presently known cultural localities in SRA.

Coal leasing would be limited to the maximum coal development potential area. Under this alternative, 1,340 acres of land, identified under the cultural resource screen would be withdrawn from leasing unless full mitigation



measures to result in no adverse effect upon the resources, can be devised. These are areas of site complexes which require consideration of relationships between sites, which probably cannot be adequately mitigated individually.

All known sites and areas not yet subject to archeological survey would be managed in accordance with all applicable laws and regulations to result in no adverse effects upon the resource. Socio-cultural resources in the coal area would be managed in consultation with the pueblos of Zuni and Acoma.

Under this alternative, the management concerns of fluid mineral leasing and right-of-way exclusion and avoidance areas would both provide additional measures of protection for cultural resources. Fluid leasing stipulations would be applied far more broadly. While under all alternatives, oil and gas activities would be carried out in compliance with all applicable laws, regulations, and guidelines to result in no adverse effect; these special stipulations could reduce the number of sites irreversibly committed through mitigative measures. The same long-term benefit would result from the designation of larger areas of right-of-way exclusion and avoidance under this alternative.

Overall, management approaches to most issues under this alternative would improve management and preservation of cultural resources, and lessen the degree of long-term irreversible commitments of the resource through intensive mitigation. ORV limitations and closures would have a mixed effect of reducing vandalism and inadvertent tire damage, while effectively precluding scientific excavation because of overwhelming logistic problems posed to field schools and researchers. Wild horse management and the minor reduction of AUMs under vegetative uses would present no change in effects upon cultural resources.

#### PALEONTOLOGY

Management approaches to most issues and management concerns under this alternative

would have essentially the same negligible effects upon paleontological resources as discussed under Alternative A. The land ownership adjustment issue under this alternative would involve the most limited disposal of land, which would help minimize the inadvertent transfer of significant fossil resources. The issue with greatest potential effect upon paleontological resources is coal leasing, which would proceed in the larger area of the highest coal potential. This is viewed as a short-term beneficial effect by many paleontologists since terms under an MOU with the State of New Mexico and the BLM require that the effects of coal developed on paleontological remains be mitigated.

#### RECREATION/OFF-ROAD VEHICLES

There would be no impacts to recreational resources through the resolution of the vegetative use, wild horse or coal leasing suitability assessment issues, and the fluid leasing management concern.

Land ownership adjustments would include the acquisition of 51,500 acres of nonpublic lands within SMAs as a high management priority. Acquisition of these lands would be beneficial in enhancing recreation management and providing additional lands with high value recreation resources.

This alternative would include designating 690,740 acres as "open", 581,570 acres as "limited" to existing roads and trails, and 248,300 acres "closed" to ORV use within the SRA. Recreation values in primitive and semi-primitive nonmotorized areas would be enhanced and improved through closure of 248,300 acres to motor vehicle use; limiting ORV use on 581,570 acres would maintain semi-primitive motorized and roaded natural recreation opportunities.

This alternative would favor accommodating access needs for resource conservation-oriented programs. As a result, the need to provide recreational access, both legal and physical, would be satisfied.

Identifying and managing (implementing prescriptions in Appendix S) 29 SMAs, 13 of

which are recreation related, would greatly benefit the protection of recreational resources within the SMAs. Excluding surface disturbing activities would protect the natural character of these areas. Recreation opportunities protected would include semi-primitive nonmotorized, semi-primitive motorized and roaded natural classes.

Significant recreation resources within 29 SMAs, 13 of which are recreation related, would be protected as rights-of-way would be excluded and surface disturbing activities associated with rights-of-way would not occur.

Implementation of this alternative would protect significant recreational resources by limiting surface disturbing activities resulting from rangeland improvements, mineral exploration and development, rights-of-way, ORV use, geophysical exploration, and possibly oil and gas development.

#### VISUAL RESOURCES

There would be no significant impacts to visual resources through the resolution of the vegetative uses, wild horse, or coal leasing suitability assessment issues or the fluid leasing management concern.

Land ownership adjustments would enhance management of SMAs and conversely protect areas with high scenic quality, especially in the Sierra Ladrone and Tinaja SMAs.

ORV designations would protect the scenic quality in Class I and II areas, as motor vehicle use in these areas would either be "limited" to existing roads and trails or "closed" (See ORV Map 2-13). Degradation of scenic quality through the development of new access roads would not occur on approximately 829,870 acres. However, new roads would degrade visual resources over the long term on approximately 585,700 acres which would be designated open to ORV use.

Developing new access roads into currently inaccessible areas could impact visual resources, depending on their location. Generally, new access roads through Class II areas would degrade the scenic quality of

these areas, but could comply with management objectives for Class II and IV areas.

Limiting surface disturbing activities within SMAs would protect the significant visual resources within these areas. The Class I lands within the Tinajas and Sierra Ladrones SMAs would receive needed protection. Surface disturbing activities would be more restrictive in this alternative than those in Alternative B.

Excluding rights-of-way in SMAs and VRM Class I and Class II areas would protect the areas with the highest scenic quality in the SRA. Some degradation of visual resources could occur in Class III areas, depending on the magnitude and type of right-of-way. Most rights-of-way are compatible with Class IV management objectives (see Appendix J).

#### SOCIAL AND ECONOMIC CONDITIONS

The ORV, access, and wild horse management issues along with the right-of-way avoidance management concern are not likely to have social or economic impacts under this alternative.

Land ownership adjustments involve the disposal of approximately 39,040 acres in Catron and Socorro Counties. Using the 1986 mill levies and average PILT for 1985, there could be a reduction of county revenues of approximately \$6,954 annually. This is approximately .4 percent of the property tax revenues for the two Counties and is not likely to have serious consequences. Some of the PILT loss would be offset by any acquisition of private land to Federal ownership in these counties.

Vegetative use under this alternative shows approximately a 9-percent decrease in livestock grazing preference in the long term from a current preference of 28,008 AUMs to 25,508 AUMs (-2,500 AUMs). While this appears to be a substantial decrease, the average use over the past five years is 22,593 AUMs. The preference under this alternative would not require any decrease in herd size or production; consequently no reduction would be expected in receipts or "return to labor,



management, and capital;" however, the reduction in preference would result in a decrease in the value of assets of approximately \$200,000 and a decrease in borrowing power of about 60 to 70 percent of the decreased asset value. The preference reduction would also reduce the potential to produce receipts from the current potential of \$884,677 to approximately \$841,000. These reductions could be serious for some of the individual operators, but it should not be reflected on a regional basis.

The proposed SMAs would result in short-term, positive, social impacts with no change in economic values. In the long term, impacts would be positive due to the preservation of social values and could be positive for economic values. For example, an area managed for recreation could have positive economic benefits resulting from increased recreational use and/or tourism.

Coal leasing suitability assessment does not identify specific volumes of coal for development and, therefore, does not provide specific data for either social or economic analysis. An estimate of community impacts or opportunities foregone can be derived by looking at figures used in the San Juan River Regional Coal EIS. It was estimated for that EIS that as many as 300 jobs may result from surface mining one million tons of coal per year. If these jobs paid an average of \$17,000 per year, the annual payroll would be over \$5,000,000. A 10-percent change in employment or income has been used as a benchmark to determine if an impact is significant. If this level of change is considered significant and if the January 1987 employment figure (5,865) for the SRA is used, there would have to be a 2,000,000 ton per year mining operation to bring about a 10-percent employment change. The personal income for the SRA in 1984 was reported by the BEA at \$116,220,000. If the 10-percent change is considered to be the level at which a change becomes significant and if the previous assumption is correct that a million tons of coal mining would generate \$5,000,000 of wages then a mining operation of just over 2,000,000 tons per year would be required to be considered significant. Another factor that

affects the level of significance is that the location of the potential coal mining is such that all impacts would not remain within the SRA; and, as the area broadens, the magnitude of the impacts on any given area would be reduced. Considering coal tracts for further consideration for leasing would not have social or economic impacts in the SRA. Further environmental analysis will be given to tracts that are sought for leasing and mining.

Fluid mineral leasing would continue with the addition of a few specific stipulations added to the BLM's standard leasing provisions. The potential exists for the creation of impacts of both a social and economic nature if rapid oil and gas development were to take place. However, the industry condition does not indicate that rapid development is likely. Exploration and development at levels experienced during the 1980's would not be expected to have significant social or economic impacts either in the short or long terms. Although State revenues, and to a lesser extent County revenues, result from oil and gas production a continuation of present procedures with the added stipulations would result in little change from the present situation. Rapid oil and gas development could result in positive impacts on revenues. Specific levels of impact would depend on volume of production and price at the specific time.

In summary, some minor social or economic impacts may occur with each resource use proposed under this alternative. However, economic conditions in the energy industry could cause minerals development to reach levels that could become significant. No irreversible or irretrievable social or economic impacts are expected under this alternative.

#### ALTERNATIVE D - (RESOURCE PRODUCTION)

##### MINERALS

Resolution of the vegetative use, access, and wild horse management issues would have no impact on mineral resource development.

## Leasables

### Oil and Gas

Under this alternative, resolution of the ORV use and coal leasing suitability issues would have no impacts on oil and gas resource development.

The biggest impact under this alternative to the gas and oil resources development would come from the land ownership adjustment issue, since the maximum amount of Federal land is planned to be disposed of under this alternative, either through sale or exchange. Table 4-2 shows the acres of land to be disposed of within each oil and gas potential category. Up to 22 percent of the land under the "low" category, 51 percent under the "low-to-moderate" category (SWEPI development area) and up to 92 percent under the "moderate" category are planned for disposal.

The most likely areas to be developed during the life of this plan would be the "low-to-moderate" area in Catron County and the "moderate" areas in Socorro and Catron Counties. As can be seen by the percentages shown above, if all the land is disposed of that is planned to be disposed of, almost all of the land most likely to be developed within the next 20 years would be taken out of Federal ownership, resulting in a proportionate reduction of oil and gas leasing and royalty revenue potential to the Federal Government.

Non-Federal land ownership could also cause oil and gas resource development to become more costly in the SRA. Also, if up to 51 percent of its development area was removed from Federal control, SWEPI would probably not be able to satisfactorily complete its development contract with the BLM. If it does become more costly to develop oil and gas resources in the SRA, future development in the area may be discouraged. Of course, since the BLM's mineral disposal policy would be adhered to, no foreseeable important oil and gas potential areas would be transferred from Federal ownership.

Proposed acquisition of legal access under this alternative to the southeastern part of

Catron County and the eastern part of Socorro County would enhance oil and gas development possibilities in those areas.

Five SMAs are carried forth in this alternative involving about 66,500 acres. Of these five SMAs, three of them (Tinajas, Fort Craig, and Teypama) are not within any of the known oil and gas resources potential areas; and, therefore, their impacts can be considered negligible. The other two SMAs are within the "low-to-moderate" potential area in Catron County. The Divide Tin SMA is a minerals production-oriented SMA and its prescriptions would facilitate oil and gas development within its boundaries. The Datil Well Campground is also within the "low-to-moderate" gas and oil potential area and includes 640 acres. The Datil Well Campground area is small compared to the area included in the "low-to-moderate" category; therefore, its impact to the oil and gas program is considered negligible.

Since this is a minerals production-oriented alternative, the amount of land to which the proposed fluid leasing stipulations have been applied is minimal. Table 4-13 shows how much land within the different oil and gas potential categories is affected by the fluid leasing stipulations. Note that only 1,600 acres or about 0.2 percent of the land in the "low-to-moderate" potential area is subject to the "No Surface Occupancy" stipulations. This is a substantial reduction in restricted areas and would open up an additional 177,100 acres (21 percent) of the area most likely to have oil and gas development on it within the timeframe of this plan (20 years). This would increase proportionately oil and gas leasing and royalty revenue potential to the Federal Government, as well as possibly encouraging future oil and gas exploration and development in the SRA due to potentially lower costs and less restriction under Federal land having oil and gas potential.

There is no Federal land in the SRA "Closed to Leasing" under this alternative. The only restriction in the "moderate" category is the 66,600 acres subject to the WSMR Safety Evacuation Extension Area, but, as noted previously the impact from this stipulation is considered negligible. There is an additional



TABLE 4-13  
Oil and Gas Resources Affected by Fluid Leasing Decisions  
Alternative D

Fluid Leasing Decisions	Potential (in acres)				Total
	Low	Low to Moderate	Moderate	No Known	
Open to Leasing	184,500	825,600	225,900	1,046,900	2,282,900
Surface Occupancy Restricted Only by Standard Leasing Provisions	51,200	821,800	159,300	748,700	1,781,000
Surface Occupancy Restricted by:					
Required mitigation of protected resources	0	3,800	0	2,200	6,000
Management discretion	0	0	0	0	0
Seasonal management discretion	0	0	0	0	0
WSMR Extension Area	133,300	0	66,600	296,000	495,900
No Surface Occupancy Restrictions	1,100	1,600	0	19,400	22,100
Closed to Leasing *	0	0	0	0	0
Discretionary closure	0	0	0	0	0
Withdrawals	0	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.

1,100 acres (0.6 percent) of "No Surface Occupancy" in the "low" category and 19,400 acres (2 percent) of "No Surface Occupancy" in the "No Known" potential category but since it is highly unlikely that these areas would be developed within the lifetime of this plan, these impacts are considered negligible.

There is one very small right-of-way exclusion area totalling about 120 acres in the "low-to-moderate" potential area; but because of its size, its impact to the oil and gas resource is considered negligible. Two other right-of-way avoidance areas totalling about 14,920 acres located outside the known oil and gas potential areas are planned under this alternative. Since it is highly unlikely that oil and gas development would take place in areas outside the known oil and gas potential areas within the next 20 years, impacts from these avoidance areas can be considered negligible.

Since the BLM's minerals policy would be adhered to, no foreseeable important oil and gas potential areas would be disposed of. Proposed acquisition of legal access under this alternative would enhance oil and gas exploration and development possibilities. There are only four small SMAs totalling about 4,337 acres and one large (62,130 acres) mineral SMA (the Divide Tin SMA) planned under this alternative. The impacts, due to the small SMAs, can be considered as negligible. The prescriptions for the Divide Tin SMA would facilitate oil and gas resource exploration and development within its boundaries. The SMA fluid leasing stipulations have been applied minimally under this alternative, resulting in a 21-percent increase of land available for oil and gas resources development within areas that are most likely to be developed within the life of this plan. This increases proportionately with oil and gas leasing and royalty revenue potential to the Federal Government, as well as possibly encouraging future oil and gas exploration and development in the SRA because of potentially lower development costs and less restrictions on Federal land. The only other fluid leasing stipulation applied extensively under this alternative is the WSMR Safety Evacuation Extension Area, out, as noted previously,

impacts due to this restriction can be considered as negligible.

#### Coal

Resolution of the SMA and the ORV use issues, and the fluid leasing and right-of-way management concerns under this alternative have no impact on coal development.

Impacts associated with the land tenure adjustment issue are essentially identical to those identified under Alternative B. Opportunities for Federal control and revenue within the Datil Mountain coal field could be foregone because of sparse subsurface information to guide disposal decisions.

Under this alternative approximately 27,640 acres of Federally-owned coal would be made available for further consideration for leasing. This area encompasses the major economically feasible strippable coal resources in SACA with the exception of 1,040 acres of raptor habitat. Impacts to coal development under this issue are essentially the same as those under Alternative B.

Overall short- and long-term impacts to coal development would be essentially the same as identified under Alternative B.

#### Geothermal

Under this alternative, resolution of the ORV use and coal leasing suitability issues would have no impacts on geothermal resources exploration and development.

As with the oil and gas resources, the biggest impact under this alternative to geothermal resource exploration and development is the amount of land planned for disposal in the resolution of the land ownership adjustment issue. If all Federal land is transferred that is planned, up to about 52 percent (16,300 acres) of the land in the Socorro KGRA and up to about 39 percent (69,900 acres) of the land in the "low" potential areas would be transferred to non-Federal ownership. This would reduce proportionately the potential geothermal leasing and royalty to the Federal Government and may increase the cost of doing



geothermal exploration and development in these areas to State or private landowners. This could increase the cost of geothermal development in these areas and also reduce proportionately the amount of potential geothermal leasing and royalty revenue to the Federal Government. Since BLM's mineral disposal policy would be adhered to, no foreseeable important geothermal potential areas would be transferred.

Acquisition of legal access under this alternative would enhance geothermal development possibilities in the KGRA.

As noted under the "oil and gas resources" section of this alternative, only four small conservation SMAs and one large mineral SMA (Divide Tin) are planned under this alternative. Only one of these SMAs infringes upon a known geothermal potential area, the Tinajas cultural resource SMA. This SMA is included within 5,800 acres of the "low" geothermal potential area.

Table 4-14 shows how the various categories of geothermal potential are affected by the SMA fluid leasing stipulations. As can be seen, the only stipulation affecting geothermal resources under this alternative is the "No Surface Occupancy" stipulation which affects about 5,800 acres in the "low" potential area and the WSMR Safety Evacuation Extension area which affects about 13,300 acres in "low" geothermal potential areas. It is highly unlikely that any geothermal development would take place in the "low" geothermal potential areas within the 20-year life of this plan; therefore, impacts associated with these restrictions are considered negligible.

The only right-of-way avoidance area that infringes upon a known geothermal potential area is a small (1,280 acres) right-of-way avoidance area that is within the Tinajas SMA. Since this right-of-way avoidance area is already within a "No Surface Occupancy" area, no additional impacts are anticipated.

In summary, under this alternative, since BLM's mineral disposal policy would be adhered to, no foreseeable important geothermal potential areas would be transferred from

Federal ownership. Acquisition of legal access to the Socorro KGRA would enhance geothermal development possibilities in that area. Impacts from the SMA issue and the fluid leasing and right-of-way management concerns are all associated with the small Tinajas SMA that lies within the "low" geothermal potential area. These restrictions are all on a geothermal area that is highly unlikely to be developed within the life of this plan; therefore, the impacts are considered negligible.

#### Locatable

The resolution of the ORV use and coal leasing issues and the fluid leasing and right-of-way management concerns would have no impacts on locatable mineral development.

Proposed actions under the land ownership adjustment issue could potentially transfer approximately 43 percent of the moderate to high mineral potential areas for locatable minerals from the SRA's administration (see Table 4-5). Impacts primarily involve the possible loss of Federal control of mineral availability within the Cat Mountain, Datil-Pie Town, Hansenburg, Iron Mountain, Lemitar Mountain, Magdalena, Ojo Caliente, Rayo, Scholle, and Socorro Mountain known mineral resource area. Substantial impacts could occur to all types of locatable mineral development with the exception of tin and possible related molybdenum deposits. Known beryllium and tungsten resources within the Iron Mountain area could be transferred from Federal ownership. Since existing mining claims and the BLM's mineral estate disposal policy would ensure that all foreseeable economic resources would be retained, only minor impacts would be anticipated.

Decisions under the SMA issue would withdraw an additional 300 acres of Federal mineral estate from entry. No ACEC would be designated. Also, acquisition efforts would be directed toward those lands within the Divide Tin SMA to improve access and increase Federal holdings in the vicinity of the Taylor Creek Tin District where disseminated tin or molybdenum deposits are possible. Actions taken in respect to the Divide Tin SMA tend to enhance mineral development.

TABLE 4-14  
Geothermal Resources Affected by Fluid Leasing Decisions  
Alternative D

Fluid Leasing Decisions	Potential (in acres)			Total
	Low	Moderate	No Known	
Open to Leasing	180,600	31,000	2,093,400	2,305,000
Surface Occupancy Restricted Only by Standard Leasing Provisions	161,500	31,000	1,593,100	1,785,600
Surface Occupancy Restricted by:				
required mitigation of protected resources	0	0	6,000	6,000
Management discretion	0	0	0	0
Seasonal management discretion	0	0	0	0
WSMR Extension Area	13,300	0	479,200	492,500
No Surface Occupancy Restrictions	5,800	0	15,200	21,000
Closed to Leasing *	0	0	0	0
Discretionary closure	0	0	0	0
Withdrawals	0	0	0	0

\* Does not include U.S. FS, FWS, BOR or Military withdrawals.



As exhibited by Table 4-5 only about 5 percent of the Federal mineral estate and 11 percent of the known locatable mineral resource areas would be withdrawn from location. Since the BLM's mineral estate disposal policy would be adhered to, no significant locatable resources would be transferred from Federal ownership with the exception of mining claim patents. Thus the mineral estate would continue to remain open at current levels and with fewer minor restrictions than at present. Benefits to locatable mineral resources would not result in any major increase of activity unless an increase in demand and economic feasibility occurs.

### Saleables

#### Material Sales

Resolution of the ORV use and SMA issues and the fluid leasing and right-of-way management concerns would have no impacts on saleable mineral development.

Decisions under the land ownership adjustment issue may dispose of 31 percent of the BLM-managed construction aggregate resources of "moderate" to "high" potential. This includes 24 percent of the "moderate" to "high" potential aggregate resources occurring on Federally-managed lands (see Table 4-6).

The proposed disposals could limit the availability of construction aggregates within the vicinity of Socorro, Magdalena, and Datil. Potential restrictions to the availability of construction aggregates in the Socorro area would be slightly higher than those under Alternative B. Potential restrictions to the availability of aggregates for roads and buildings in the Datil and Magdalena areas would be substantially higher than all other alternatives. Under this issue, all Federal mineral estate along one-third of U.S. 60 would be further considered for disposal. This includes approximately 35 miles, 12 miles, and 8 miles along the right-of-way of U.S. 60 within the vicinity of Magdalena, Datil, and Pie Town, respectively. SRA-managed Federal lands along one-third of NM State Highway 12 southwest of Datil, one-third of NM State Highway 78 south

of the VLA, and two-thirds of NM State Highway 107 south of Magdalena would also be considered for disposal. Although a sizeable portion of the local highway network crosses areas identified for disposal, the SRA's disposal policy would favor the retention of reasonably spaced material sources to support all highways.

Actions taken under this alternative for the coal leasing issue would tend to enhance mineral material development. Enhancements would be slightly more than those under Alternatives B and C.

With application of the BLM's mineral disposal policy, impacts under this alternative would be similar to those identified under Alternative B.

#### RANGELAND

Resolution of the access issue would have no impact on rangeland resources under this alternative.

Under the land ownership adjustment issue 231,000 acres are identified for disposal. Approximately 34,650 AUMs of grazing use with revenues totaling \$46,780 per year from grazing fees would be lost as a result of this action. Other impacts are similar to those described under Alternative A.

For the Chupadera Mesa area this alternative would emphasize the production of forage for livestock consumption giving it priority over other competitive uses. Currently 28,008 AUMs in the Chupadera Mesa are allocated to livestock. Under this alternative, an additional 3,250 AUMs would become available in the long term. An additional 330 AUMs would be allocated to wildlife to satisfy population numbers. The remaining 2,920 AUMs, as they become available, would be allocated to livestock; however, depending on the circumstances, further allocation may be made to wildlife.

This alternative would implement an intensive grazing management program over the Chupadera Mesa area. AMPs would be implemented on eight allotments. Management actions implemented

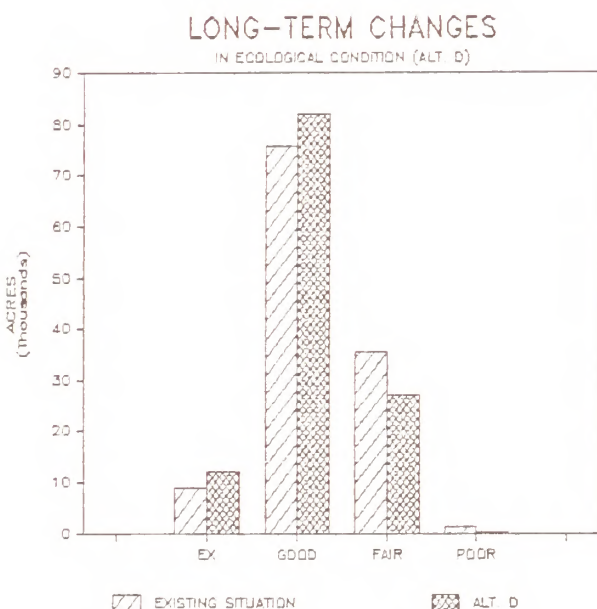
would be those described in Appendix C and under the Grazing Management Section of Chapter 2.

Impacts from rangeland improvements would be similar to those described under Alternative A. Approximately 38 miles of fence, 37 miles of pipeline and one well are proposed for implementation. These rangeland improvements would disturb approximately 50 acres of vegetation per year.

Impacts from vegetative land treatments are the same as those described under Alternative A. Vegetative land treatments are proposed for 227,000 acres of public land. This includes 7,550 acres in Chupadera Mesa, 140,000 acres in the East Socorro ES area, and 80,000 acres under the Nogal HMP area. The vegetative and visual aspects of approximately 11,000 acres per year would change as a result of the above treatments. Long-term increases in forage production would be allocated as described above.

A short-term reduction in vegetation and a long-term increase in vegetation production and quality are expected. Figure 4-4 illustrates the expected long-term changes in ecological condition (excellent, good, fair, and poor) for the Chupadera Mesa area.

FIGURE 4-4



Under this alternative, ORV use would be closed on -0- acres, limited on -0- acres and open on approximately 1.5 million acres. Areas being used the heaviest would be those near towns and cities. Impacts are similar to those described under Alternative A, although to a greater extent.

five SMAs are brought forward under this alternative: Divide Tin, Tinajas, Fort Craig, Datil Well Campground, and Teypama. Only Fort Craig and Teypama exclude livestock grazing. The exclusions would not impact livestock and would benefit vegetation. Datil Well Campground and Tinajas do not impact the rangeland resources. Divide Tin would not impact the resource; however, if mining does occur, impacts would be addressed under 43 CFR 3809 regulations which require an EA.

SMAs with T&E plant habitat (see Alternative B) do not appear under this alternative. However, BLM would continue to meet its legal obligation as described by policy and the Endangered Species Act. Positive steps to improve and protect T&E plant habitat would not be given priority and in the long term, habitat would likely deteriorate.

The scenic quality of the Soaptree Yucca area would also likely deteriorate. Although there is an abundant supply of yucca within the area, much of it would be sought after for landscaping purposes. With increased livestock numbers, use on yucca would increase.

Resolution of the wild horse issue would have a positive impact upon the livestock industry. Removal and adoption of all wild horses from the WHMA would occur. The 384 AUMs from the wild horses would be allocated to livestock first then wildlife. Short-term impacts would be those involving the round-up of the wild horses as described under Continuing Management Guidance and Actions. Long-term impacts would be the availability of forage to livestock, no future round-ups, and monitoring and maintenance of improvements for the purpose of maintaining a horse herd in the area.

Impacts to the rangeland resources from coal mining activities would be the same as those described under Alternative B.



With less stringent restrictions on fluid leasing and right-of-way avoidance areas, vegetation would be impacted more. Increased vehicular use and construction could damage the vegetation in the short term. Reclamation in the long term would regain the natural vegetation. The proposed fluid leasing stipulations would protect those areas with sensitive resource values.

In Chupadera Mesa it is estimated that 3,250 AUMs would become available in the long term. Livestock would benefit primarily from this alternative. Wildlife would be allocated an additional 330 AUMs. Intensive management would be conducted on eight allotments. It would be unreasonable to do intensive management on some of the allotments, because of the small amount of public land acreage involved. Improvement would be seen in vigor, production and ecological condition.

Unavoidable adverse impacts are similar to those in Alternative B, with the exception that the number of acres disturbed by actions would be greater. New rangeland improvements would disturb 50 acres, fluid leasing activities would increase, and vegetative land treatment areas would increase.

Irreversible and irretrievable commitment of resources are similar to those in Alternative B.

#### Threatened or Endangered Species (Plants)

Impacts to T&E plants from this alternative are described for the SMA issue above. Populations of T&E plants have been mapped for reference during the planning stage of rangeland improvements and other projects. Efforts will be made to protect and improve habitat.

#### WILD HORSES

Resolution of the land ownership adjustment, vegetative use, ORV, access, SMAs, and coal leasing suitability issues and the fluid leasing and right-of-way avoidance area management concerns would have no impact on the wild horses under this alternative.

Under this alternative all wild horses would be removed and made available for adoption. The 384 AUMs allocated to wild horses would be apportioned between livestock and wildlife.

Removal of all horses, would eliminate the need for monitoring, round-ups and transportation of horses, and management to improve the horse herd.

All horses would be removed. Management would be directed to livestock and wildlife.

Unavoidable adverse impacts are the same as in Continuing Management Guidance and Actions.

#### LANDS

Resolution of the vegetative use, access, wild horse, and coal leasing issues and the fluid leasing management concern would have no impact on the lands program under this alternative.

Resolution of the land ownership adjustment issue would strongly impact the lands program as approximately 231,000 acres of scattered and isolated public lands would be disposed of over the long term. The primary positive impact associated with these actions is that BLM would be able to dispose of difficult to manage public lands west of Chupadera Mesa, the Rio Grande Valley, the lowlands between the San Mateo and Magdalena Mountains, large portions of the Plains of San Augustine and all public lands north of U.S. Highway 60 from Socorro to Quemado excluding the Ladrón Mountain Area. Identification for disposal of the high valued public lands within the Rio Grande Valley should stimulate exchange proposals from the State of New Mexico, whereby the BLM could acquire desirable State lands to enhance other BLM resource programs.

Table 4-7 identifies in general terms the other primary impacts associated with the disposal of these lands. In turn, BLM would then be able to concentrate its management efforts in two large retention blocks, one just east of the Rio Grande Valley and the other in the extreme northwestern corner of the SRA, where well-consolidated public land

would be retained and managed under multiple-use principles. BLM would also retain management responsibilities for Ladron Mountain, Pelona Mountain, Horse Mountain, portions of the public lands in the Plains of San Augustine and all public lands surrounding the Bosque del Apache and Pedro Armendaris Land Grants.

Accordingly, approximately 1,289,610 acres of public land would be retained in public ownership under BLM administration.

Furthermore, under this alternative approximately 40,280 acres of specifically identified nonpublic lands within the boundaries of the Divide Tin SMA would be acquired to assist in the development of tin resources in that area. All other nonpublic lands within identified retention zones would be considered for acquisition as a second priority which would further assist in the effective management of resources in the retention zones. Table 4-8 identifies additional impacts to be anticipated with the acquisition of these nonpublic lands. These land ownership adjustments should be considered as a long-term project to last the entire life of the RMP.

Under the ORV issue the lands program would be affected only in the sense that land-use authorizations would be less restricted, as the entire SRA would be open to ORV use excluding National Register historical sites.

Resolution of the SMA issue would affect the lands program only through the acquisition of nonpublic lands within the Divide Tin SMA, the impacts of which have been addressed above in the land ownership adjustment issue.

Rights-of-way of all types would be totally excluded on the 120 acres of public land within the Sawtooth SMA. Right-of-way placement would be restricted on approximately 14,920 acres of public land identified as VRM Class I. This restriction would greatly inhibit the authorization of communication sites on top of Ladron Mountain as well as the authorization of some linear rights-of-way east of the Rio Grande through the Tinajas SMA. All other areas of the SRA would be open

to right-of-way placement once site-specific environmental assessments were completed.

In summary, approximately 231,000 acres of isolated and difficult to manage public lands would be disposed of over the long term while 40,280 acres of specifically identified nonpublic land would be acquired to enhance the development of tin resources. As a second priority, nonpublic lands could be acquired within retention blocks to further enhance various other BLM resource programs. Right-of-way placement would be totally excluded on 120 acres of public land and restricted on 14,920 acres of public land within VRM Class I areas.

#### FORESTRY

Resolution of the ORV use, SMA, and wild horse issues under this alternative would have no impacts on the forestry resource.

The disposal of 231,000 acres (if the lands support forest or woodlands) would reduce the acres available for management. If the lands acquired (47,470 acres) have forest or woodlands growing on them, it would increase acres available for management of fuelwood, posts, etc.

The vegetative uses issue under this alternative would not generally affect the forestry program in the SRA. However, the vegetative land treatments would affect the forestry resources if pinyon-juniper woodlands are involved. Any acres treated would reduce the base for woodland management. If the treated area contained woodlands and were opened up for salvage of the materials, a temporary increase in woodland products would become available. Eventually the forestry resources on these areas would be exhausted and the total acreage for woodland management would be reduced.

Additional access supports the forest and woodlands program, but loss of access would be detrimental to the program. Access would be affected either positively or negatively by the disposal or acquisition of lands.

Some forest or woodland areas could be impacted under this alternative by carrying



forward 27,640 acres within the high potential coal area for future leasing.

These impacts would consist of destruction and/or alteration of the forestry resource. Eventually, the forestry resource on these areas would be exhausted and the total acreage for woodland management would be reduced.

Under this alternative, the fluid leasing management concern could impact the forestry resource. If production occurs, efforts should be taken to minimize, protect or salvage the vegetative material.

The forestry resource throughout the SRA would be subject to increased destruction under this alternative resulting from various types of rights-of-way (i.e., telephone, electric, roads, and pipelines). All major types of rights-of-way (i.e., 345kv electric, highways, and gas lines) would be confined to existing physical corridors or would require a site-specific EIS. The amount of impact would directly relate to the number, type, and locations of the rights-of-way.

Continuation of present management would result in both short- and long-term surface disturbing impacts to 1,216 acres of the forestry resource. These impacts would consist of the destruction and/or alteration of the forestry resource.

The short- and long-term impacts would be the direct result of the physical aspects of construction of rangeland improvements, vegetative land treatments, various leases, permits and rights-of-way, geophysical exploration activities, possibly oil and gas production-related activities and wildfires.

Efforts would be taken to salvage all forestry products effected as a result of impacting actions indicated above.

#### SOILS/WATER RESOURCES

The wild horse issue would not impact soils/water resources under this alternative.

Under this alternative, 231,000 acres could be transferred out of BLM administration. This

action could also result in transfer of long-term soil improvement and erosion control structures. If the structures are maintained by the party or agency acquiring the lands, no impact to the soils resource would occur. If the structures are not maintained, sediment and salt loads to lower basin users would increase.

Increases in vegetative production would be achieved through increases in vegetative treatments (7,550 acres), more rangeland improvements, and more intensive management practices. This, in turn, would result in a short-term increase in soil surface disturbance until additional cover is established.

The East Socorro Grazing ES and Nogal HMP areas are proposed for 220,000 acres of vegetative treatments. These treatments as in the other alternatives would result in short-term soil loss with a long-term increase in stability and improvement in watershed conditions.

Open ORV use on approximately 1.5 million acres would result in intensive short- and long-term soil erosion, and advancement in existing gully systems as well as the establishment of new areas of severe gully erosion. This soil loss would constitute an irretrievable commitment of the resource.

These impacts would be particularly evident in critical watershed areas. Increased salt and sediment yields over the long term would occur on the major drainage systems.

Acquiring legal access into presently inaccessible lands or where physical access only exists would have minimal impacts to soils/water resources. The low priority of closing and reclaiming existing undesirable routes would over the long term increase soil loss and gully erosion.

Since the five SMAs under this alternative would be either of small size or would have reduced or no resource restrictions, this alternative would increase impacts to soils/water resources in a similar manner as Alternative A on 286,070 acres.

Soils and watershed systems would be disturbed and disrupted on portions of 27,640 acres carried forward for further coal leasing. Groundwater quantity and quality could be impacted. Specific impacts would be evaluated prior to actual leasing as a result of tract delineation in a Regional EIS or lease by application.

Impacts from fluid leasing would be similar to those for Alternative A but to a much more severe degree since 1,740,000 acres would have no restrictions other than standard lease provisions. This would allow occupancy on highly erosive soils or critical watersheds with few restrictions. Increased soil loss and subsequent reduction in productivity and water quality would result.

Under this alternative approximately 118,000 acres of critical watershed and erosive soil areas would be subject to rights-of-way placement. Portions of these critical erosion areas would be impacted adversely through unmitigatable location. This could result in severe erosion over the long term and an irretrievable loss of the resource. Short-term intensive soil loss and gully erosion would occur over much of these areas until rehabilitation or stabilization measures took effect. This alternative would increase salt and sediment loads over the long term.

In summary, some increased loss of soil and increased sediment production could be expected should erosion control structures be disposed of on portions of 231,000 acres of public land under the land ownership adjustment issue.

Vegetative uses and treatments could improve vegetative cover and patterns of use of livestock and wildlife and reduce soil erosion and sediment production on 247,550 acres of public land.

Open ORV use on approximately 1.5 million acres would reduce soil productivity and increase erosion and gully development in critical watersheds and erosive soil areas. This would result in an irretrievable loss of the resource.

Soils and water resources would be impacted on 27,640 acres carried forward for further coal leasing.

Unrestricted rights-of-way location would impact portions of 118,000 acres of critical watershed and erosive soils by increasing soil loss, gully establishment and salt sediment production.

#### AIR QUALITY

Impacts caused by resolution of issues and management concerns under this alternative would not differ greatly from those described in either Alternative A or B. The increased availability of mineral resources that could be developed and processed would possibly result in a slight reduction in air quality, but not to a great extent. Compliance procedures on a case-by-case basis would reduce impacts to air quality.

In summary, a reduction in air quality may result due to proposed actions under this alternative.

#### WILDLIFE

##### Wildlife Habitat

Sale or exchange of public lands would mean that up to 231,000 acres of BLM-administered surface would no longer be under BLM control. However, the opportunity to consolidate Federal lands could be beneficial to the habitat management program if higher-quality wildlife habitat could be obtained.

In the short term the disposal of public lands proposed by this alternative would have no effect on wildlife habitat and wildlife populations in the SRA. The long-term effects are unpredictable as they depend upon the management practices of the agency or individual to whom the lands are transferred.

The acquisition of 40,280 acres of nonpublic lands could be beneficial to the wildlife resource if high quality habitat is obtained.

As described in Alternative A, food habitat studies conducted in the SRA have shown that



there is considerable dietary overlap between wildlife and livestock. Extremes in weather conditions, such as drought can result in competition for available forage. Even though this alternative might increase forage (2,920 AUMs) as a result of rangeland improvements, wildlife would experience negative impacts because this increase would be allocated first to livestock and then to wildlife and watershed.

Vegetative manipulation in some areas can improve existing habitat conditions. Use of herbicides for vegetative treatment would cause short-term adverse impacts in pronghorn habitats where forbs comprise a major component of their diet. This impact can be mitigated by plowing a portion of the area to promote increased growth of forbs. Livestock and wildlife/watershed conflicts would increase under this alternative.

Designating approximately 1.5 million acres of the SRA "open" to ORV travel would result in a deterioration in species privacy, and harassment to wildlife would increase. As a result, habitats under this alternative could be greatly reduced in size or made completely unusable.

Under this alternative, access acquisition would increase. As physical and legal access is expanded within the SRA, species privacy would deteriorate and harassment to wildlife would increase. As a result, the existing usable habitats could be greatly reduced in size or made completely unusable.

Under this alternative, the following unique areas would not be identified as SMAs: Ladron Mountain, Pelona Mountain, Agua Fria, Horse Mountain, Walnut Canyon, and San Lorenzo Canyon. All of these areas have special resource values which warrant special management in order to benefit wildlife.

The impacts as a result of implementing this alternative would be similar to those in Alternative A. The primary, adverse impacts would result from lack of adequate protection for valuable wildlife habitat and lack of management guidelines for riparian zones on 165,800 acres.

Resolution of the wild horse management issue under this alternative could have a positive impact on the wildlife resources. If the existing grazing allocation (384 AUMs) for wild horses is not available for additional livestock use by the allottee, the effect would be additional habitat and additional available forage for wildlife (201 deer). However, if the total existing grazing allocation for the horses is made available to the allottee for livestock use, there could be a negative impact on the wildlife resources. Increased competition between cattle and wildlife could occur because the areas and type of forage utilized by the horses would not be the same as those used by the cattle.

The coal leasing suitability/assessment issue under this alternative would carry forward for future leasing 27,640 acres of Federal minerals. This acreage is the result of applying the unsuitability criteria to the maximum coal potential area.

Presently, there would not be any direct impacts to the wildlife resource as a result of carrying this acreage forward into the Federal coal activity planning process. Environmental analyses prepared during the activity planning and permitting process would address all site-specific impacts resulting from coal development. It should be noted that additional inventory data analysis for raptor nests, etc., could require the reapplication of the unsuitability criteria and multiple-use screens during the activity planning process.

Under this alternative the fluid leasing management concern could (if production occurs) impact 283,000 acres of wildlife habitat including 7,000 acres of bald eagle habitat, 87,000 acres of pronghorn habitat, 1,100 acres of raptor habitat, and 11,500 acres of potential bighorn sheep habitat. These impacts would be the result of the previously mentioned special resources not being adequately protected within the existing fluid leasing stipulations. The amount of impact would directly correlate to the amount of production. These impacts would consist of degradation of species privacy and destruction of habitat.

Wildlife habitat throughout the SRA totaling 1,520,610 acres would be subject to increased degradation of species privacy and habitat destruction under this alternative resulting from various types of rights-of-way i.e., telephone, electric, roads, and pipelines. All major types of rights-of-way (i.e., 345 kv electric, highways, and gas lines) would be assessed in a site-specific EIS. The amount of impact would directly relate to the number and type of rights-of-way.

The implementation of this alternative would result in both short- and long-term changes in the wildlife resource (i.e. habitats and populations). The major short-term impact would consist of species privacy intrusions during crucial periods of the year (i.e. fawning seasons, nesting seasons, and etc.)

This short-term impact would be the direct result of the physical aspects of construction of rangeland improvements; various leases, permits, and rights-of-way; ORV use and various other recreational activities; and geophysical exploration activities and possibly oil and gas production-related activities.

The major long-term impact of implementing this alternative would consist of destruction and/or alteration of various habitats which would render the effected habitats and some adjoining habitats as unsuitable for various wildlife species. These long-term impacts would be the result of the same activities as were listed above for the short-term impacts but would also include land disposals.

#### Threatened or Endangered Species (Animals)

There would be no impacts to listed T&E animals species under this alternative.

#### CULTURAL RESOURCES

Resolution of the wild horse issue under this alternative would have no impacts to cultural resources.

The safeguards to be employed to ensure no adverse effects upon cultural resources as a result of management of the land ownership

adjustment issue are presented in the initial discussion under Alternative A, and these hold for all alternatives. However, difficulties in completing land transfers in accordance with no adverse effect procedures would be magnified. At over twice the acreage of the next largest disposal alternative (231,000 acres versus 100,320 acres for Alternative B), the likelihood of occurrences of sites of complexity and scale to fall outside the criteria for State land exchanges under the MOU, and outside the economic scale acceptable for mitigation in transfers to private ownership, greatly increases. While transfers under this alternative would be conducted to result in no adverse effects upon cultural resources, achieving this objective, especially over time as selections of land become diminished, would become increasingly difficult and expensive if mitigation is considered.

The vegetative use issue under this alternative emphasizes an increase in livestock production to maximum levels. Impacts upon cultural resources could be expected to increase proportionately from trampling and disturbance of features. In certain settings, where the nature of the cultural resource, natural topography, and livestock densities and other factors combine, impacts could be raised disproportionately to cause severe impacts on sites. Land disturbing vegetative treatments and rangeland improvements, although increased, would be subject to procedures to ensure no adverse effect.

Impacts to cultural resources due to designating the majority of public lands "open" to ORV travel are similar to those described in Alternative A. The lack of ORV restrictions in areas of known important cultural resource values could result in significant adverse effects. Mitigating measures to reduce these impacts include public education, resource monitoring, patrol, and restricting ORV travel in affected and potentially affected areas. The proposed SRA 10-percent cultural resource inventory should help identify areas impacted by ORV use.

Access under this alternative would be increased in support of resource development.



Any new road construction would be conducted in accordance with laws and regulations to result in no new adverse effects. However, increased access in remote areas could result in indirect adverse effects from vandalism.

Under this alternative no new cultural resource SMAs would be proposed. Management of existing National Register sites and sites with CRMPs would continue (Tinajas ACEC, Fort Craig, Teypama, Mogollon Pueblo, Bat Cave). Some protection and preservation of sites with special needs could be achieved through existing procedures such as CRMPs, but prescriptions which would limit development of other resources emphasized under this alternative could be expected to be very conservatively applied.

Under this alternative, no lands would be dropped from consideration from coal mining on the basis of the cultural multiple-use screen. The 1,340 acres identified under the cultural screen which contain complex assemblages of sites would be subject to mitigation to result in no adverse effects; but, as is the case with all sites subject to mitigation and removal, this would result in an irreversible commitment of the resources, which in this case would increase the overall commitment of cultural resources resulting from coal leasing in the SACA.

The management concerns of fluid leasing and right-of-way exclusion areas would retain the protection of cultural resources through laws and regulations, but discretion in administering them would be the most limiting of all alternatives. Special stipulations for fluid leasing for the protection of cultural values would not be employed. A greater irreversible commitment of the resource could be expected to result from both management concerns, since avoidance would be de-emphasized and mitigation presumably would become more common.

Even in the best management systems there will always be a certain background level of impacts upon cultural resources resulting from unauthorized actions, ORV use, livestock trampling, wildlife disturbance, and accidents and mistakes. Overall, however, this

alternative would raise this background and at the same time increase more measurable effects such as irreversible commitment of resources through archeological mitigation. Under this alternative, the likelihood of conflicts would be increased, particularly in the long term, as land selection alternatives diminish.

#### PALEONTOLOGY

Management of the access and wild horse issues and the fluid leasing and right-of-way avoidance management concerns would have no effect upon paleo resources.

The sale or exchange of public lands could result in the loss of presently undiscovered fossil localities. The scale of transfer of lands proposed under this alternative increases the potential for inadvertent losses from public ownership.

Vegetative uses are expected to have negligible effects upon paleo resources at any alternative level of management.

Overall, ORV use does not have an adverse effect on paleo resources. In certain areas, however, designating the public lands "open" to ORV use could have a slight negative impact on paleo resources since ORVs may damage fossils through breakage and increased erosion. Roads also allow access to remote fossil localities, which is a negative effect when fossil theft occurs, but is a positive effect when it allows researchers better access to the fossils.

No SMAs for paleo values are proposed under any of the alternatives for this RMP, since no outstanding localities are presently known.

There would be a short-term positive effect by future coal development. An inventory of paleo resources may be required prior to mining, as well as documentation or collection of vertebrate specimens uncovered during mining, as stipulated in the MOU between the BLM and the State of New Mexico's Energy and Minerals Department.

Under this alternative, management of the lands issue has potential for negative impact

upon paleo resources. ORV use and the access issue pose both positive and negative effects through providing access for scientific investigation and potential for fossil theft. Coal leasing is considered to present short-term positive effects through inventories and exposures of possibly fossiliferous strata. This balances the negative impacts due to destruction of fossils by mining activities.

#### RECREATION/OFF-ROAD VEHICLES

The resolution of the vegetative use, wild horse management, and coal leasing suitability issues and the fluid leasing management concerns would not impact recreational resources.

Recreation opportunities would generally be eliminated on 231,000 acres of lands that are transferred from public ownership, unless ownership was to another agency that would maintain these opportunities. The identified retention areas generally contain high recreation values.

This alternative would designate approximately 1,520,610 acres of the SRA as "open" to ORV use which would result in increased resource damage and user conflicts. The amount of existing semi-primitive nonmotorized recreation opportunities would be reduced because of the increase of roads and trails in the SRA over the long term.

Access to significant recreation resources in the SRA would not be a priority as emphasis would be placed on accommodating access needs for resource production-oriented programs in this alternative.

The five SMAs identified under this alternative would be subject to impacts similar to those outlined in Alternative B. These areas would be protected, and as a result, their recreation values would be enhanced over the long term. The recreational opportunities would be protected on approximately 66,467 acres.

There would be very little opportunity to consolidate desirable recreation areas due to

the limited number of SMAs identified and because no specific recreation blocks of land have been identified. Popular recreation areas (such as San Lorenzo Canyon and Pelona Mountain) which have not been identified for special management under this alternative could be subject to surface disturbance and their recreation values could be diminished over the long term.

Semi-primitive motorized and nonmotorized recreation opportunities would be degraded throughout the SRA over the long term, as few right-of-way avoidance or exclusion areas would be established.

#### VISUAL RESOURCES

Resolution of the land ownership adjustment, vegetative uses, wild horse management and the coal suitability assessment issues and the fluid leasing management concern would have no impact on visual resources.

Designation of approximately 1,520,610 acres of the SRA as open to ORV use would reduce the overall visual quality of visual resources. Dispersed motorized vehicle activity would tend to degrade the visual quality of VRM Class I and II areas, depending upon the absorption capabilities of the landscape (see Appendix J). The shift in scenic quality ratings would be an irreversible impact.

Resolution of the access issue would result in the same impacts as for Alternative C.

Tinajas ACEC, a Class I visual area, would be the only visual resource SMA with adequate protection in this alternative. Other significant Class I areas in the SRA would not be afforded protection in the long term.

Right-of-way avoidance areas would only be established for VRM Class I areas. The scenic quality of Class II areas would be degraded over the long term due to development activities associated with rights-of-way in these areas.

Over the long term visual resources in Class I and II areas would be degraded due to both unauthorized and authorized trails, roads and



other disturbance. The surface disturbance contributing to this degradation would result from seismic exploration, oil and gas development, mineral exploration, rangeland improvements, various rights-of-way, ORV, and hunting activities.

#### SOCIAL AND ECONOMIC CONDITIONS

Resolution of the ORV use, access, and wild horse management issues, and the right-of-way exclusion and avoidance area management concern are not likely to have social or economic impacts under this alternative. This should be true in both the short- and long-term situations.

Land ownership adjustments involve the disposal of approximately 231,000 acres in Catron and Socorro Counties. Using the 1986 mil levies and average PILT for 1985, there could be a reduction of county revenues of approximately \$24,300 annually. This is approximately 1.3 percent of the property tax revenues for the counties and is not likely to have serious consequences. Some of the PILT loss would be offset by any acquisition of private land to Federal ownership in these counties.

Vegetative use under this alternative shows approximately a 10.4 percent increase in livestock grazing preference. It is estimated that the ranch potential to produce receipts would increase from the current estimate of \$884,677 to approximately \$936,000. This would be a positive change for the affected operator, but would not be reflective of a regional economic view. This additional 2,920 livestock AUMs, based on the market value of \$80 would add approximately \$233,600 to the asset value of the affected livestock operators and would increase their borrowing power by about 60 to 70 percent of this increased asset value. While data are not adequate for specific analysis of watershed and wildlife vegetative use, it is assumed that the magnitude of social or economic impacts would be minimal.

The proposed SMAs would result in short-term, positive social impacts with no change in economic values. In the long term, impacts

would be positive due to the preservation of social values and could be positive for economic values. For example, an area managed for recreation could have positive economic benefits resulting from increased recreational use and/or tourism.

Coal leasing suitability assessment does not identify specific volumes of coal for development and, therefore, does not provide specific data for either social or economic analysis. An estimate of community impacts or opportunities foregone can be derived by looking at figures used in the San Juan River Regional Coal EIS. It was estimated for that EIS that as many as 300 jobs may result from surface mining one million tons of coal per year. If these jobs paid an average of \$17,000 per year, the annual payroll would be over \$5,000,000. A 10-percent change in employment or income has been used as a benchmark to determine if an impact is significant. If this level of change is considered significant and if the January 1987 employment figure (5,865) for the SRA is used, there would have to be a 2,000,000 ton per year mining operation to bring about a 10-percent employment change. The personal income for the SRA in 1984 was reported by the BEA at \$116,220,000. If the 10-percent change is considered to be the level at which a change becomes significant and if the previous assumption is correct that a million tons of coal mining would generate \$5,000,000 of wages, then a mining operation of just over 2,000,000 tons per year would be required to be considered significant. Another factor that affects the level of significance is that the location of the potential coal mining is such that all impacts would not remain within the SRA; and as the area broadens, the magnitude of the impacts on any given area would be reduced. Considering coal tracts for further leasing would not have significant social or economic impacts in the SRA. Further environmental analysis would be given to tracts that are sought for leasing and mining.

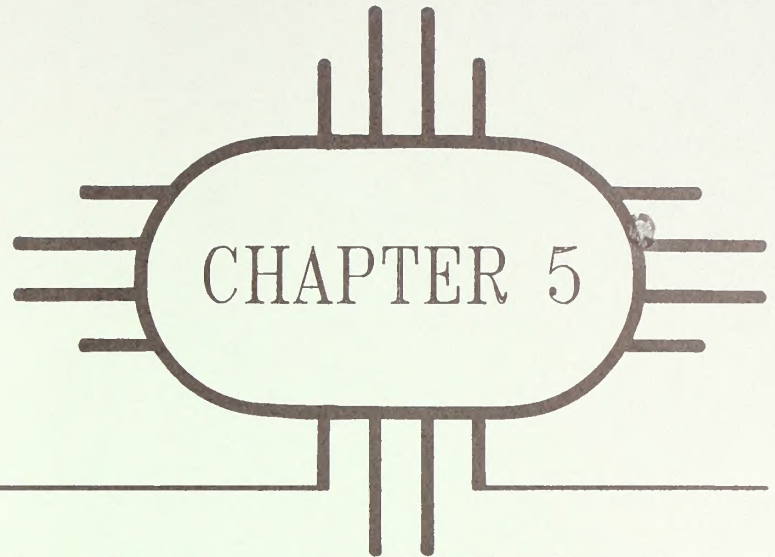
Fluid mineral leasing would continue with the addition of a few specific stipulations added to the BLM's standard leasing provisions. The potential exists for the creation of impacts

of both a social and economic nature if rapid oil and gas development were to take place. However, the industry condition does not indicate that rapid development is likely. Exploration and development at levels experienced during the 1980's would not be expected to have significant social or economic impacts either in the short or long terms. Although State revenues and to a lesser extent county revenues result from oil and gas production a continuation of present procedures with the added stipulations would not likely result in significant impacts. Rapid oil and gas development could result in positive and significant impacts on revenues.

The specific level of impact would depend on the volume of production and price at the specific time.

In summary, some social or economic impacts may occur with each resource use proposed under this alternative. None of these impacts would be minor as they are developed in the plan. However, economic conditions in the energy industry could cause minerals development to reach levels that could become significant. Some social values (scientific, educational or historic) may need to be given special attention to avoid irreversible and irretrievable losses in areas designated as SMAs under other alternatives.





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# CONSULTATION AND COORDINATION

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## INTRODUCTION

The Draft Socorro Resource Management Plan/Environmental Impact Statement (RMP/EIS) was prepared by an interdisciplinary team of resource specialists from the Bureau of Land Management's (BLM) Socorro Resource Area (SRA) upon close coordination with the Las Cruces District Office.

Writing of the RMP/EIS document itself began in 1986; however, preceding the writing phase a complex process of data gathering and other preparatory activities occurred. This process included resource inventory, public participation, interagency coordination, and preparation of a Management Situation Analysis (MSA). The MSA is on file in the SRA office as is documentation of the public participation and interagency coordination. Consultation and coordination with agencies, organizations, and individuals occurred in a variety of ways throughout the planning process. A complete mailing list of all those contacted throughout the planning process is also on file in the SRA office.

The initial sections of this chapter are devoted to consultation and coordination activities carried out during the preparation of this Draft RMP. Comments and responses will be included in this chapter in the Final RMP/EIS.

During the planning process, formal and informal efforts have been made to involve the public, other Federal agencies, State, and local governments. Several points of public involvement are mandated with which there has been compliance.

### FORMAL CONSULTATION

Consultation with the U.S. Fish and Wildlife Service (FWS) is required prior to initiation of any project by BLM that may affect any Federally listed threatened or endangered (T&E) species or its habitat. Consultation is required by Section 7 of the Endangered Species Act of 1973. This RMP/EIS is considered a major planning effort, and formal consultation has been initiated. Letters of formal consultation are on file in the SRA office.

The N.M. Department of Game and Fish (NMDG&F) and the N.M. Natural Resources Department have been contacted in regard to State listed T&E wildlife and plant species. This plan is consistent with legislation protecting State listed species. Coordination and consultation with the State will be continued throughout the planning process and during implementation of the plan.

The BLM cultural resource management program operates in accordance with 36 Code of Federal Regulations (CFR), Part 800, which provides specific procedures for consultation between the BLM and the State Historic Preservation Office (SHPO). A Memorandum of Understanding (MOU) NMSO-168 between the SHPO, Advisory Council on Historic Preservation and the BLM New Mexico State Office became effective October 19, 1982. This MOU incorporates procedures for exchanging information with the SHPO concerning cultural resources on public and private lands. It defines activities requiring consultation and establishes reporting standards. Similarly, the Programmatic Memorandum of Agreement for the protection of cultural resources under the Federal coal management program establishes procedures and focuses on measures that protect the types of sites usually found on Federal land. The SHPO has been consulted during the development of the Draft RMP/EIS.

### CONSISTENCY WITH OTHER PLANS

The BLM planning regulations require that RMPs be "consistent with officially approved or adopted resource-related plans, and the policies and procedures contained therein, of other Federal agencies, State and local governments, and Indian tribes, so long as the guidance and RMPs are also consistent with the purposes, policies and programs of Federal laws and regulations applicable to public lands . . . "(43 CFR 1610.3-2). In order to ensure such consistency, finalized plans were solicited from Federal, State, and local agencies as well as Tribal governments listed in Table 5-1. These same agencies will receive copies of this Draft RMP and be asked to comment.

At this time there are no known inconsistencies between any of the alternatives and officially approved and adopted resource-related plans of other Federal agencies, State and local governments, and Indian tribes. Continuing coordination and consultation will take place during the public comment periods on the Socorro Draft RMP/EIS, Final RMP/EIS and the Record of Decision.

#### PUBLIC PARTICIPATION

Public participation in the Socorro RMP is a dynamic process occurring throughout the development of the plan and beyond. In addition to formal public participation steps, informal contacts occur frequently with public land users and interested persons through meetings, field trips, telephone calls or letters. All applicable public participation is documented and analyzed in the planning process and kept on file in the SRA.

A notice was published in the Federal Register on January 28, 1986, announcing the formal start of the planning process, which was preceded by informal meetings with the Socorro and Catron County Commissions held on November 7, and December 8, 1985, respectively. Also prior to publishing the Notice of Intent, the District Advisory Council met on December 3, 1985, to discuss planning issues and planning criteria that have guided the development of this Draft RMP/EIS.

On February 6, 1986, the SRA published the "Socorro RMP Spotlight," a newsletter/brochure to inform the public of tentative planning issues and criteria and to invite the public to comment on their concerns. Another "Spotlight" was published on May 28, 1986, to keep the public informed as to the progress of the RMP.

In addition to these mailings, the SRA conducted two public meetings to further discuss the formulation of planning issues and criteria. These meetings, one in Socorro on February 19, 1986, and the other in Quemado the following day discussed these issues and criteria and outlined procedures for introducing formal comments and how the SRA would respond to specific RMP comments.

The SRA plans to prepare an RMP summary update every year following the published final RMP sometime in the latter part of 1988. The purpose of this update will be to inform the public of the progress made in implementing the RMP. The summary will also describe the activity plans to be prepared the following year so that interested members of the public may request copies and comment on them. The BLM hopes that this will enable the public to become further involved in the specific land management actions resulting from the implementation of this RMP.

#### PUBLIC REVIEW OF THE DRAFT RMP/EIS

Table 5-1 is a partial listing of various Federal, State and local agencies, organizations, and individuals to which the Draft RMP/EIS is being sent for review and comment.

Informal coordination with the public has taken place throughout the planning process through personal contacts, phone calls, letters, and will continue throughout the remainder of the planning process.

This RMP/EIS was prepared by an interdisciplinary team of resource specialists. Table 5-2 lists the names and qualifications of each team member.

#### ALLOTTEE CONSULTATIONS

In compliance with Section 8 of the Public Rangelands Improvement Act of 1978, all permittees and lessees in the vegetative use issue area have been contacted to initiate the required consultation, coordination, and cooperation process. Allottees were contacted by letter and informed of the selective management category assigned to the allotment and the implication of this designation. Consultation meetings with allottees were scheduled at their requests.

Preplanning efforts for the Socorro RMP included correspondence and informal consultation, with livestock grazing permittees.



TABLE 5-1  
PARTIAL LISTING OF DOCUMENT RECIPIENTS

FEDERAL GOVERNMENT

Department of Agriculture  
     Soil Conservation Service  
     U.S. Forest Service  
 Department of the Army  
     Corps of Engineers  
 Department of the Interior  
     Bureau of Indian Affairs  
     Bureau of Mines  
     Bureau of Reclamation  
     National Park Service  
     Office of Surface Mining  
     U.S. Fish and Wildlife Service  
     U.S. Geological Society  
 Department of Energy  
     Office of Environmental Compliance  
 Environmental Protection Agency  
 Department of Transportation  
 Federal Highway Administration

STATE GOVERNMENT

Bureau of Mines and Mineral Resources  
 Department of Finance and Administration  
     Range Improvement Task Force  
 Historic Preservation Division  
     State Historic Preservation Officer  
 Energy and Minerals Department  
 Governor of New Mexico  
 Department of Agriculture  
 Health and Environmental Department  
     Environmental Improvement Division  
 State Land Office  
 Natural Resources Department  
 New Mexico Department of Game and Fish  
 Division of State Forestry  
 State Highway Department  
 Congressional Delegation  
 Museum of New Mexico  
 Soil and Water Conservation Division  
 Middle Rio Grande Conservancy District

LOCAL GOVERNMENTS

MAYORS

Cities of:  
     Magdalena  
     Reserve  
     Socorro  
     Springerville

Jornada RC&D  
 Catron County Commissioners  
 Socorro County Commissioners

SPECIAL INTEREST GROUPS

Continental Divide Trail Society  
 New Mexico Cattle Growers Association  
 Albuquerque Archaeological Society  
 Museum of Natural History  
 Salt River Project  
 Shell Western  
 Dorado Energy Group  
 Central New Mexico Audubon Society  
 National Audubon Society  
 New Mexico Wildlife Federation  
 Sierra Club  
 The Nature Conservancy  
 Society for Range Management  
 Rio Rancho Rockhounds  
 American Motorcycle Association  
 Socorro Gun Club  
 Santa Fe Parks and Recreation  
 The Wilderness Society  
 New Mexico Bureau of Land Management Wilderness  
     Coalition  
 American Horse Protection Association  
 American Mustang and Burro Association  
 Grazing Allottees

TRIBAL GOVERNMENT

Zuni Tribe  
 Navajo Tribe  
 Pueblo of Acoma  
 Pueblo of Laguna  
 Southern United Pueblos  
 Alamo Band of the Navajo Nation

TABLE 5-2  
LIST OF PREPARERS

NAME	RMP ASSIGNMENT	EDUCATION	EXPERIENCE
Joel E. Farrell	Team Leader/Air Quality	B.S. Wildlife Biology M.S. Agriculture Arizona State University	BLM - 14 yrs. Multi-Resources Staff Chief and Wildlife Biologist DOD - 1 yr. Wildlife Biologist FMHA - 1 yr. Assistant County Supervisor
Wesley K. Anderson	Wildlife Habitat/T&E Animals Fire Management	B.S. Wildlife Biology New Mexico State University	BLM - 9 yrs. Wildlife Management Biologist
Charles H. Carroll	Cultural Resources/ Paleontology	B.A. Anthropology University of New Mexico	BLM - 3 yrs. Archaeologist Private Industry - 8 yrs. Consulting - 3 yrs.
Kevin I. Carson	Recreation/Visual Resources/ Wilderness	B.S. Park Administration Texas Tech. University	BLM - 7 yrs. Outdoor Recreation Planner National Park Service - 1 1/2 yrs. Park Ranger
Clem Chastain	Soils/Water Resources/ Watershed	B.S. Soils Oklahoma State University	BLM - 12 yrs. Soil Scientist SCS - 15 yrs. Soil Scientist Corps of Engineers - 3 yrs. Soil Scientist
Roger O. Cumpian, Jr.	Vegetation/Livestock Grazing/ Climate/Wild Horses/ T&E Plants	B.S. Animal Science/ Range Management, Texas A&I University	BLM - 9 yrs. Range Conservationist
Rocky L. Curnutt	Soils/Water Resources/ Watershed	B.S. Range Management Washington State University	BLM - 10 yrs. Lands and Minerals Staff Chief and Range Conservationist



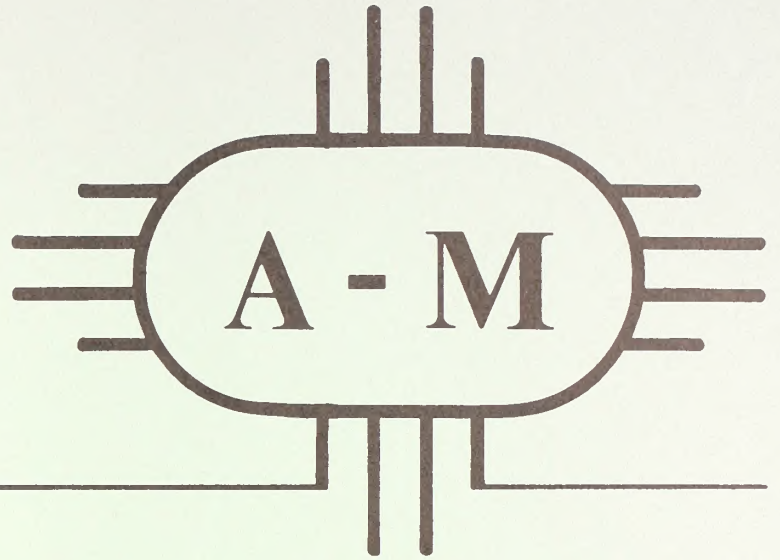
TABLE 5-2  
LIST OF PREPARERS (Continued)

NAME	RMP ASSIGNMENT	EDUCATION	EXPERIENCE
Roy D. Deen	Mineral Resources/ Geology/Topography	B.S. Geology M.S. Geology University of Texas at El Paso	BLM - 3 yrs. Geologist USFS - 6 yrs. Geologist Utah State Geologic Survey - 2 yrs. Geologist Private Industry - 4 yrs. Geologist
Jack Dossett	Forestry	B.S. Forest Management Oklahoma State University	BLM - 24 yrs. Forest Management
Jane A. Farmer	Writer/Editor/ Graphic Computer Data	B.A. Business Oklahoma State University	BLM - 10 yrs. Writer/Editor SCS - 5 yrs. Secretary (Stenography)
Kent Hamilton	Socio-Economics	B.S. Agricultural Economics Utah State University	BLM - 9 yrs. Regional Economist BIA - 15 1/2 yrs. Economist
Jonathan S. Hertz	Lands/Access	B.A. Geography Arizona State University	BLM - 14 yrs. Realty Specialist and Range Technician
Bill Jonas	Mineral Resources/ Geology	B.S. Geology B.A. Anthropology University of Maryland	BLM - 7 yrs. Geologist USGS - 1/2 yr. Geologist Private Industry - 1/2 yr. Geologist
Jim R. Peterson	Cartography/ Misc. Graphics	B.A. Biology University of Minnesota	BLM - 8 yrs. Engineering Tech Private Industry - 3 yrs. Geologic Draftman and Cartographer
Ralph Wilcox III	Coal Leasing Suitability Assessment	B.S. Geology Eastern Illinois University M.S. Geology New Mexico Institute of Mining and Technology	BLM - 4 yrs. Geologist USGS - 3 yrs. Geologist

TABLE 5-2  
LIST OF PREPARERS (Continued)

NAME	RMP ASSIGNMENT	EDUCATION	EXPERIENCE
Dennis Unshler	Coal Leasing Suitability Assessment	B.S. Geology M.S. Geology New Mexico Institute of Mining and Technology	BLM - 3 yrs. Supervisor Geologist MMS - 1 yr. Supervisor Geologist USGS - 7 yrs. Geologist
<u>SUPPORT PERSONNEL</u>			
Barbara Gutierrez	Administrative Staff Chief		
Leah L. Padilla	Clerk Typist		
Marianne Prusin	RMP Records Manager		
Diane Colcord	Graphic Art Work		
<u>REVIEWERS</u>			
<u>LCDO</u>			
<u>NMSO</u>			
Bruce Call	Jaime Provencio		
Joe Torrez	Ed Heffern		
Tom Birch	Verlyn Saladen		
Ken Holmes	Jerry Townsend		
Rich Watts	Brian Mills		
Juan Padilla	Mike Fisher		
Dwane Sykes	Charles Pettee		
Pam Smith	Teodoro Rael		
Charles Hodgkin	Ron Bartel		
Bill Gilbert	Phil Beck		
	Bernardo Chavez		
	Don Hinrichsen		
	Jon Joseph		
	Steve Fosberg		
	Larry Pointer		
	John Kenny		





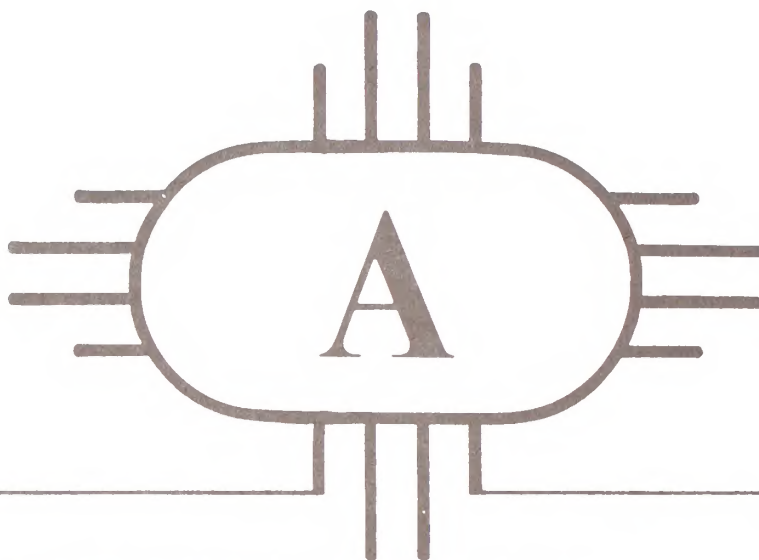
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## APPENDICES

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## Summary of Management Framework Plan Decisions

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## SUMMARY OF MANAGEMENT FRAMEWORK PLAN DECISIONS

This appendix provides a summary of those Management Framework Plan (MFP) decisions which have been evaluated and have been brought forward for incorporation into this Resource Management Plan (RMP). Their incorporation into this Draft RMP is either through continuing management guidance (CMG), through one of the seven issues or through one of the two identified management concerns (MC). The Stallion MFP, which roughly covers the eastern portion of the Socorro Resource Area (SRA) was completed in 1976, yet was updated on several occasions with the Middle Rio Grande (MRG) plan amendments. The decisions determined in these amendments, which primarily pertain to land disposal actions, are brought forward in total to be assessed further in Alternative A. These MRG plan amendment decisions are too numerous and site specific to be included in this appendix, yet are available at the SRA office.

The Ladrone MFP completed in 1977 and the Divide MFP completed in 1983 comprise the remaining portions of the SRA and also contain decisions which pertain to lands now within the Rio Puerco Resource Area; however, only decisions which pertain to the SRA are considered in this appendix. A complete listing of those decisions which have been dropped from further consideration and not brought forward into this RMP can also be seen at the SRA office.

Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
<u>LADRON MFP</u>					
Minerals	M-1.3	Leave Ladron Mountain open to minerals, restricting only leasables and saleables.		X	
Recreation	R-3.3	Acquire approximately 2,650 acres of nonpublic land within the Ladron Wilderness Study Area (WSA).		X	
Forestry	F-1.1	Evaluate forestry and vegetative sales on 67,472 acres of pinyon/juniper areas, of moderate to high erosion.	X		
Forestry	F-1.2	Restrict vehicle travel to existing roads and trails in pinyon/juniper areas.		X	
Forestry	F-2.1	Allow the sale of firewood and vegetation in pinyon/juniper areas of slight to low erosion class.	X		

Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Wildlife	WL-1.1	Develop two inverted umbrella water catchments primarily for deer [see management situation analysis (MSA) for locations].	X		
Wildlife	WL-4.5	Acquire approximately 19,500 acres of nonpublic land valuable for terrestrial wildlife habitat (see MSA for locations).		X	
Wildlife	WL-4.6	Acquire needed legal access in three general areas (see MSA for locations).		X	
Watershed	W-1.1	Reduce soil surface factors an average of 10-15 points on 22 allotments.	X		
Watershed	W-2.1	Develop and implement Phase II watershed plans on the nine watershed areas.	X		
Watershed	W-3.1	Prohibit the construction of new roads and trails within the planning unit to protect watershed values.		X	
Watershed	W-3.2	Develop a cooperative plan with the Socorro County Commissioners to minimize watershed damage in road maintenance programs.	X		
Watershed	W-4.1	Reduce erosion and watershed damage by restricting vehicular travel to existing roads and trails.		X	
Range	RM-1.1	Develop allotment management plans (AMPs) on 4 allotments (see MSA for listing).	X		
Range	RM-1.2	Review and revise 9 existing AMPs (see MSA for listing).	X		
Range	RM-1.4	Determine the proper grazing capacity of all allotments.	X		
Range	RM-2.1	Implement grazing management systems on 13 allotments as outlined in RM-1.1 and RM-1.2 to increase the forage and grazing capacity by 10-15 percent over the next 15 years.	X		



Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Range	RM-4.1	Block up public lands on 8 allotments through private and State exchanges (see MSA for allotment listings).		X	
Range	RM-4.2	Acquire legal access for approximately 80 miles of roads.		X	
Range	RM-5.2	Protect two known ecologically unique areas.		X	
Range	RM-5.3	Identify unknown ecologically unique areas. If areas are located, protect them as outlined in RM-5.2.		X	
<u>STALLION MFP</u>					
Lands	L-5.1	Request the clean-up of the Luis Lopez dump site.	X		
Lands	L-5.2	Rehabilitate the MCA Mill Site in T. 4 S., R. 1 W., Sec. 15.	X		
Minerals	M-1.1	Reserve minerals which are valuable for geothermal development.		X	
Minerals	M-2.0	Keep common variety or saleable mineral deposits available for disposal as the market demands.	X		
Minerals	M-2.1	Designate a community pit north of Socorro as demand dictates.	X		
Minerals	M-2.2	Designate a community pit south of Socorro. Utilize previous borrow pits.	X		
Recreation	R-1.1	Protect and preserve the natural and scenic values of San Lorenzo Canyon.		X	
Recreation	R-1.3	Manage San Lorenzo Canyon as Class II visual area.		X	
Recreation	R-1.4	Coordinate management of San Lorenzo Canyon with U.S. Fish and Wildlife Service.		X	
Recreation	R-5.1	Close Soap-tree Yucca Area to Off-Road Vehicle (ORV) and vegetative product sales.		X	

Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Recreation	R-5.2	Restrict grazing in Soaptree Yucca area.		X	
Recreation	R-5.3	Manage Soaptree Yucca Area as Class III visual area.		X	
Recreation	R-8.1	Restrict ORV to designated roads and trails.		X	
Recreation	R-10.1	Manage Nogal Canyon north as Class III visual area.	X		
Recreation	R-14.2	Stabilize Teypama Pueblo.		X	
Forestry	F-1.1	Close to ORV all pinyon/juniper areas of moderate to high erosion class.		X	
Wildlife	WL-3.1	Root plow 97,000 acres of creosote to improve terrestrial species habitat, and reseed with native grasses once watershed plans have been completed.	X		
Wildlife	WL-3.5	Complete watershed Phase II plans before developing browse and grass seeding projects for antelope and other wildlife species on approximately 8,300 acres.	X		
Wildlife	WL-4.1	Install antelope panels or passes whenever necessary to facilitate the free movement of antelope.	X		
Watershed	W-1.1	Reduce soil surface factors an average of 10-15 points on 61 allotments.	X		
Watershed	W-2.1	Develop watershed Phase II plans on the management opportunity areas 1, 2, 4, 5, 6, and 7.	X		
Watershed	W-3.2	Develop a cooperative plan with the Socorro County Commissioners wherein BLM can assist the County in minimizing watershed damage in their road maintenance program.	X		
Watershed	W-4.1	Reduce erosion and watershed damage by restricting vehicular travel to existing roads and trails.		X	



Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Range	RM-1.1	Develop AMPs on 45 allotments (see MSA for allotment listing). The East Socorro Grazing Environment Statement (ES) has prioritized and categorized these allotments.	X		
Range	RM-1.2	Review and revise all AMPs (see MSA for allotment listing). The East Socorro Grazing ES has prioritized and categorized these allotments.	X		
Range	RM-1.3	Determine the proper grazing capacity of all allotments scheduled for AMPs and adjust livestock numbers accordingly.	X		
Range	RM-2.2	Determine the proper grazing capacity of all custodial allotments and adjust livestock numbers accordingly.	X		
Range	RM-3.1	Implement grazing management systems as outlined in RM-1.1 and RM-1.2 to improve the forage resource and increase grazing capacity by 10-15 percent over the next 15 years.	X		
Range	RM-5.1	Reduce the present horse herd numbers on the Del Curto Allotment to 20-30 head.		X	
Range	RM-5.2	Provide sufficient forage in New Tank New Well, and Bustos pastures for the 20-30 head herd of horses on the Del Curto Allotment.		X	
Range	RM-5.3	Formulate a Wild Horse Management Plan (WHMP).		X	
Range	RM-5.4	Reduce livestock numbers proportionately when wild horse numbers exceed 30 head until completion of the WHMP.		X	
<u>DIVIDE MFP*</u>					
Lands	L-1.2	Dispose of those public lands within the community of Aragon, NM.		X	
Lands	L-1.3	Dispose of certain public lands near Datil, Quemado, Omega, and Pie Town for community expansion.		X	

Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Lands	L-4.1	Designate a utility corridor along the south side of US Highway 60.			X
Lands	L-4.2	Designate a north/south utility corridor along the existing Tucson Electric 345kv transmission line.			X
Lands	L-6.1	Dispose of approximately 61,520 acres of public land by sale or exchange.		X	
Minerals	M-2.1	Restrict withdrawals, disposals, or BLM developments within coal field that would inhibit exploration and development.	X	X	
Minerals	M-5.2	Provide a sand and gravel pit for the Community of Quemado. Also establish other community pits upon demand.	X		
Recreation	R-7.1	Prohibit the sale of firewood at the Datil Well Campground.		X	
Recreation	R-10.1	Mark trail routes and trailheads along the Continental Divide on Pelona Mountain.		X	
Recreation	R-14.3	Acquire nonpublic lands in Horse Mountain and Pelona Mountain areas.		X	
Forestry	F-2.5	Open to ORV all forest lands within the Divide Planning Area (DPA).		X	
Forestry	F-3.1	Establish three forest and four woodland monitoring areas.	X		
Forestry	F-4.1	Open woodcutting areas to yield 37,500 cords of wood.	X		
Forestry	F-4.2	Establish Christmas tree area.	X		
Wildlife	WL-1.11	Acquire nonpublic lands to support wildlife programs.		X	
Wildlife	WL-2.1	Burn or chain 10,000 acres of pinyon/juniper in 50- to 100-acre irregularly shaped plots.	X		



Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Wildlife	WL-2.3	Continue wildlife/range studies and complete allotment evaluations to determine habitat capacity to support anticipated numbers of livestock and wildlife (see MSA for 91 listed allotments).	X		
Wildlife	WL-2.4	Implement livestock grazing systems to protect mule deer habitat by scheduling non-use or rest for essential winter range and fawning areas during critical periods (see MSA for 13 listed allotments).	X		
Wildlife	WL-3.1	Construct 37 to 60 antelope passes along 37 miles of woven wire fence along U.S. Highway 60 near Red Hill.	X		
Wildlife	WL-4.3	Seed browse and forbs on 152,676 acres in plots of 1,000 acres or less.	X		
Wildlife	WL-4.4	Fence portions of six earthen tank reservoirs to restrict livestock entry, yet still provide access to water. Seed adjacent drainages.	X		
Wildlife	WL-5.1	Continue wildlife/range studies and complete allotment evaluations to determine habitat capacity to support anticipated numbers of livestock and wildlife (see MSA for 67 listed allotments).	X		
Wildlife	WL-5.2	Design grazing systems to enhance antelope habitat by scheduling non-use or rest in key forb areas and kidding grounds during critical periods (see MSA for 15 listed allotments).	X		
Wildlife	WL-6.1	Develop a grazing system to eliminate livestock use on 13,500 acres near Pelona Mountain from 12/15 through 3/1.		X	
Wildlife	WL-6.2	Continue wildlife/range studies and complete allotment evaluations to determine habitat capacity to support anticipated numbers of livestock and wildlife (see MSA for three listed allotments).	X		

Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Wildlife	WL-7.1	Construct four enclosures around spring areas (see MSA for legal description and specifications).		X	
Wildlife	WL-7.3	Construct 2 miles of protection fence around San Ignacio and Nutria Springs and pipe traditional live-stock waters at least 100 feet from fences.	X		
Wildlife	WL-7.4	Acquire surface and mineral estate of specifically identified riparian/wetland areas (see MSA for listing).		X	
Cultural	C-1.1	Protect and preserve cultural sites (see MSA for listing).	X		
Cultural	C-1.2	Restrict ORV on Newton Site.		X	
Cultural	C-4.1	Allocate Zuni Salt Lake area and trails to socio-cultural use.		X	
Cultural	C-5.2	Identify 160 acres (T. 6 N., R. 3 E., Sec. 7) as suitable for exchange for Comanche Springs Site.		X	
Watershed	W-1.1	Control water run-off on approximately 80,695 acres by constructing detention dams, diversions, water spreaders, weirs, and wire checks, thus reducing the soil surface factor from 5-15 points.	X		
Watershed	W-1.2	Monitor and restrict surface disturbing activities on approximately 80,695 acres of critical erosion lands.	X		
Watershed	W-1.3	Implement watershed tillage practices on approximately 9,276 acres of grasslands, treated rabbitbrush or sagebrush areas.	X		
Watershed	W-1.4	After identification of suitable site, mechanically treat a portion of 206,774 acres of pinyon/juniper, rabbitbrush, greasewood, and sagebrush. Follow with reseeding when needed.	X		



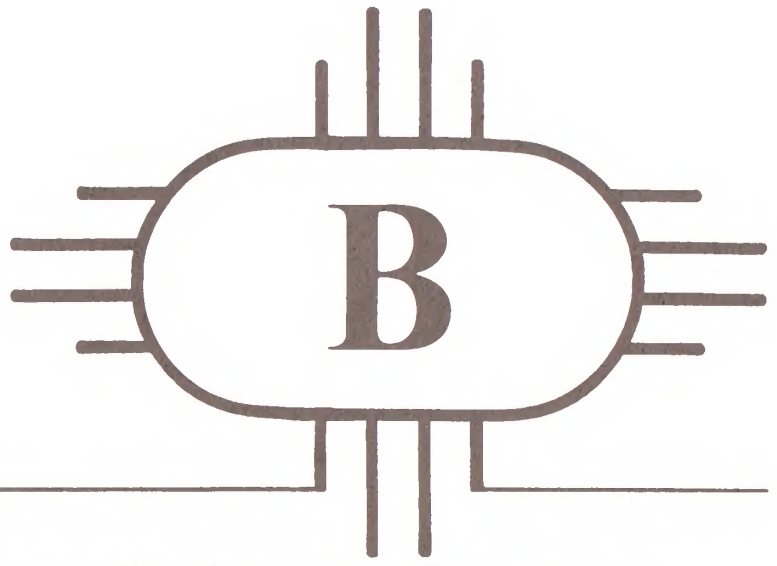
Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Watershed	W-2.1	Increase or maintain protective ground cover on approximately 503,483 acres by employing intensive grazing management systems.	X		
Watershed	W-3.1	Establish four surface water monitoring stations and 50 ground water stations to monitor pollution problems and determine corrective measures.	X		
Watershed	W-3.3	Protect by use of enclosures 2,500 acres of riparian lands (see WL-7) in order in order to maintain high quality water.	X		
Range	RM-1.1.**	Designate management categories for all allotments within DPA (see MSA for categorization criteria).	X		
Range	RM-1.2	Implement management, by category, using management criteria (see MSA), over a 10-year period. Prioritize implementation sequence. Construct rangeland improvements as required.	X		
Range	RM-1.3	Allocate forage to livestock grazing by establishing stocking rates for all allotments. Perform studies on all allotments following initiation of management to ensure proper stocking.	X		
Range	RM-1.4	Develop AMPs, for all allotments in categories A, B, and C, and develop or revise AMPs for allotments in categories D, E, and F.	X		
Range	RM-1.5	Restrict annual average utilization of key forage species to a proper use level on all category A, B and C allotments.	X		
Range	RM-1.7	Maintain range condition on range sites adapted to fire, through the use of fire management, by developing or revising a/the fire management plan for each range site or geographic area.	X		

Resource	Decision Number	Summary	Decision Incorporation		
			CMG	ISSUE	MC
Range	RM-1.8	Construct a 20-acre enclosure in each of 42 range sites for study purposes. Determine exact locations through consultation and other management needs.	X		
Range	RM-2.1	Prioritize implementation of categorized grazing allotments using criteria illustrated in the MSA, over the 10-year period beginning 1983.	X		
Range	RM-2.2	Restrict in A, B, and C categorized allotments the annual average utilization of key species to a maximum of 60 percent use.	X		
Range	RM-2.3	Perform land treatments on 353,320 acres by the year 2000 to increase livestock forage production (see MSA for specific locations and methods).	X		
Range	RM-2.4	Perform seeding trials, of not less than two acres each, in each of 33 range sites to determine potential forage production by reseeding.	X		
Range	RM-2.5	Maintain existing land treatments on 7,200 acres to achieve maximum forage production (see MSA for specific locations and methods to be employed).	X		
Range	RM-3.1	Dispose of the surface estate of isolated parcels of public land (see MSA for specific locations).		X	
Range	RM-3.6	Establish conversion ratios for livestock to ensure consistency when changes are made as to kind or class of livestock (see MSA for conversion ratios).	X		

\* MFP amendment of 1987 designated a utility corridor to correspond with the placement of a new 345 KV transmission line for El Paso Electric Co. (see Right-of-way Exclusion and Avoidance Areas Map, Alternative A).

\*\* The original six DPA allotment categories (A, B, C, D, E, and F) were later consolidated into three categories (M, I, AND C) in accordance with BLM Washington Office Policy.





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Mineral Resources Policy and Fluid Leasing Procedures

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BUREAU OF LAND MANAGEMENT - MINERAL RESOURCES  
POLICY

This statement sets forth BLM policy for management of mineral and energy resources on public lands. It reflects the provisions of three important acts of Congress: the Mining and Minerals Policy Act of 1970, the Federal Land Policy and Management Act (FLPMA) of 1976, and the National Materials and Minerals Policy, Research and Development Act of 1980. This policy statement represents a commitment by BLM to implement the policies of these statutes consistent with BLM's other statutory obligations.

The Mining and Minerals Policy Act of 1970 declares that it is the continuing policy of the Federal Government to foster and encourage private enterprise in the development of a stable domestic minerals industry and the orderly and economic development of domestic mineral resources.

The Federal Land Policy and Management Act of 1976 reiterates that the 1970 Mining and Minerals Policy Act be implemented and directs that public lands be managed in a manner which recognizes the Nation's need for domestic sources of minerals and other resources. FLPMA also provides for improved inventory, planning, and decision processes.

The 1980 National Materials and Minerals Policy, Research and Development Act restates the need to implement the 1970 act and requires the Secretary of the Interior to improve the quality of minerals data in Federal land use decisionmaking. In April 1982, the President delivered to Congress the first annual report required by the 1980 act, which provided specific guidance to implement these acts.

The BLM recognizes that public lands are an important source of the Nation's mineral and energy resources, some of which are critical and strategic. BLM is responsible for making public lands available for orderly and efficient development of these resources under principles of balanced multiple-use management.

The following principles will guide BLM in managing mineral resources on public lands:

1. Except for Congressional withdrawals, public lands shall remain open and available for mineral exploration and development unless withdrawal or other administrative action is clearly justified in the national interest.
2. BLM actively encourages and facilitates the development by private industry of public land mineral resources in a manner that satisfies national and local needs and provides for economically and environmentally sound exploration, extraction, and reclamation practices.
3. BLM will process mineral patent applications, permits, operating plans, mineral exchanges, leases, and other use authorizations for public lands in a timely and efficient manner.
4. BLM's land use plans and multiple-use management decisions will recognize that mineral exploration and development can occur concurrently or sequentially with other resource uses. The Bureau further recognizes that land use planning is a dynamic process and decisions will be updated as new data are evaluated.
5. Land use plans will reflect geological, energy and mineral values on public lands through more effective geology, energy and mineral resource data assessment.
6. BLM will supervise salable and leasable mineral operations to ensure proper resource recovery and evaluation, production verification, diligence and inspection and enforcement of the lease, sale or permit terms. BLM will receive Fair Market Value for mineral commodities where the laws provide.
7. The Bureau will maintain effective professional, technical, and managerial personnel knowledgeable in mineral exploration and development.

These principles will be implemented immediately and further clarified where necessary through specific guidance to the field.

/s/ Robert Burford  
Director, Bureau of Land Management

## INTRODUCTION

The process begins when an interested party applies for a fluid minerals lease at the BLM New Mexico State Office (NMSO) in Santa Fe. Leases may be acquired noncompetitively either over-the-counter or through a simultaneous lease drawing, or competitively through the submission of bids. Competitive leasing is required for lands situated within the boundaries of a Known Geologic Structure (KGS).

In preparation for leasing, the NMSO Mineral Leasing staff reviews land ownership maps to determine availability of Federal interests for leasing. In addition, the maps are examined to determine whether environmental protection, as well as the standard lease terms discussed in the next section, is to be stipulated.

## LEASE TERMS AND CONDITIONS

A BLM oil and gas and geothermal lease form is shown in Figure B-1. This form includes the lease terms and conditions which cover subjects such as bonding, rentals and royalties, inspections, and safety. Also covered are protection of the environment, surface resources, and improvements.

The conduct of operations section of the lease form establishes the general requirements for the protection of surface resources and is referred to herein as the "standard" lease term. This section provides authority for the modification to siting, design of facilities, timing of operations, and specification for interim and final reclamation measures to minimize adverse environmental impacts. The standard lease terms specifically require that the lessee contact the lessor prior to disturbing the surface and specify that the lessee may be required to complete minor inventories or short-term special studies.

### Special Stipulations

Special stipulations are conditions of lease issuance which the local office of the BLM or other agency provide for additional and more stringent environmental protection by allowing

for denial of operations within the terms of the lease contract. Without special stipulations, proposed operations can be modified but not denied (except under certain specific, nondiscretionary statutes). Special stipulations will be used whenever mitigating measures deprive a lessee of basic lease rights. Because of this effect on lease rights, lessees must be aware of and acknowledge in writing all special stipulations prior to acceptance of a lease offer by BLM.

BLM policy is that the use of special stipulations should be considered appropriate only when they are both necessary and justifiable. The contractual controls existing in the lease (the standard terms, regulations, and formal operational orders) provide substantial latitude within which the BLM may require modification of the siting, design and timing of operations on leaseholds, and interim and final reclamation measures. They do not, however, allow the BLM to require modifications to proposed operations that would prevent economic extraction of otherwise commercial deposits of oil and gas. Therefore, if a lessee is to be prevented from extracting oil and gas, then special stipulations are necessary and are to be used. A special stipulation is justifiable if there are resources, values, uses, and/or users present that 1) cannot coexist with oil and gas operations, or 2) cannot be adequately managed and/or accommodated on other lands for the duration of the operation, and 3) would provide greater benefits to the public than those of oil and gas operations.

The content and accurate wording of special stipulations is very important since stipulations become part of the lease contract. If the special stipulations are ambiguous, potential lessees will be uncertain as to the value of the lease. Also, if poorly written, the BLM may fail to retain, within the terms of the lease, the right to deny operations. Therefore, to the extent feasible, special stipulations are to specify the reason for the stipulation, the lands involved, and the probable effect of the stipulations on lease activities. Special stipulations should also include a provision for waiver in the event that circumstances or



## OFFER TO LEASE AND LEASE FOR OIL AND GAS

The undersigned (reverse) offers to lease all or any of the lands in item 2 that are available for lease pursuant to the Mineral Leasing Act of 1920 (30 U.S.C. 181 et seq.), the Mineral Leasing Act for Acquired Lands (30 U.S.C. 351-359), the Attorney General's Opinion of April 2, 1941 (40 Op. Atty. Gen. 41), or the

Read Instructions Before Completing

1. Name \_\_\_\_\_

Street \_\_\_\_\_

City, State, Zip Code \_\_\_\_\_

2. This offer/lease is for (Check Only One) ☐ PUBLIC DOMAIN LANDS ☐ ACQUIRED LANDS (percent U.S. interest \_\_\_\_\_)

Surface managing agency if other than BLM \_\_\_\_\_ Unit/Project \_\_\_\_\_

Legal description of land requested:

T. \_\_\_\_\_ R. \_\_\_\_\_ Meridian \_\_\_\_\_ State \_\_\_\_\_ County \_\_\_\_\_

Total acres applied for \_\_\_\_\_

Amount remitted. Filing fee \$ \_\_\_\_\_ Rental fee \$ \_\_\_\_\_ Total \$ \_\_\_\_\_

DO NOT WRITE BELOW THIS LINE

3. Land included in lease:

T. \_\_\_\_\_ R. \_\_\_\_\_ Meridian \_\_\_\_\_ State \_\_\_\_\_ County \_\_\_\_\_

Total acres in lease \_\_\_\_\_

Rental retained \$ \_\_\_\_\_

In accordance with the above offer, or the previously submitted simultaneous oil and gas lease application or competitive bid, this lease is issued granting the exclusive right to drill for, mine, extract, remove and dispose of all the oil and gas (except helium) in the lands described in item 3 together with the right to build and maintain necessary improvements thereupon for the term indicated below, subject to renewal or extension in accordance with the appropriate leasing authority. Rights granted are subject to applicable laws, the terms, conditions, and attached stipulations of this lease, the Secretary of the Interior's regulations and formal orders in effect as of lease issuance, and to regulations and formal orders hereafter promulgated when not inconsistent with lease rights granted or specific provisions of this lease.

Type and primary term of lease:

☐ Simultaneous noncompetitive lease (ten years)

☐ Regular noncompetitive lease (ten years)

☐ Competitive lease (five years)

☐ Other \_\_\_\_\_

THE UNITED STATES OF AMERICA

by \_\_\_\_\_ (Signing Officer)

(Title) (Date)

EFFECTIVE DATE OF LEASE \_\_\_\_\_

\*(Formerly 3110-1, 2, 3, 3120-1, 7, 3130-4, 5, and 7)

Tear

Tear

Tear

### Instructions

#### A. General:

1. The front of this form is to be completed only by parties filing for a regular non-competitive lease. The BLM will complete front of form for all other types of leases.
2. Entries must be typed or printed plainly in ink. Offeror must sign item 4 in ink.
3. An original and two copies of this offer must be prepared and filed in the proper BLM State Office. See regulations at 43 CFR 1821.2-1 for office locations.
4. If more space is needed, additional sheets must be attached to each copy of the form submitted.

#### B. Special:

Item 1—Enter offeror name and billing address.

Item 2—Identify the mineral status and, if acquired, percentage of Federal ownership.

of applied for minerals. The same application may not include both Public Domain and Acquired Lands. Indicate the agency controlling the surface use of the land and the name of the unit or project of which the land is a part. Offeror may also provide other information that will assist in establishing title for minerals. The description of land must conform to 43 CFR 3111. Total acres applied for must not exceed that allowed by regulations.

Payments. The amount remitted must include the filing fee and the first year's rental at the rate of \$1 per acre or fraction thereof. The full rental based on the total acreage applied for must accompany an offer even if the mineral interest of the United States is less than 100 percent. The filing fee will be retained as a service charge even if the offer is completely rejected or withdrawn. To protect priority, it is important that the rental submitted be sufficient to cover all the land requested. If the land requested includes lots or irregular quarter-quarter sections, the exact area of which is not known to the offeror, rental should be submitted on the basis of each such lot or quarter-quarter section containing 40 acres. If the offer is withdrawn or rejected in whole or in part before a lease issues, the rental remitted for the parts withdrawn or rejected will be returned.

Item 3—This space will be completed by the United States.

# PAPERWORK REDUCTION ACT STATEMENT

1. This information is being collected pursuant to the law.
2. This information will be used to create and maintain a record of oil and gas lease activity.
3. Response to this request is required to obtain a benefit.

## NOTICE

The Privacy Act of 1974 and the regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this oil and gas lease application.

AUTHORITY: 30 U.S.C. et. seq.

PRINCIPAL PURPOSE—The information is to be used to process oil and gas lease applications

## ROUTINE USES:

- (1) The adjudication of the lessee's rights to the land or resources.
- (2) Documentation for public information in support of notations made on land status records for the management, disposal, and use of public lands and resources.
- (3) Transfer to appropriate Federal agencies when concurrence is required prior to granting a right in public lands or resources.
- (4)(5) Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions.

EFFECT OF NOT PROVIDING INFORMATION—If all the information is not provided, the offer may be rejected. See regulations at 43 CFR 3100.

4. (a) Undersigned certifies that (1) offeror is a citizen of the United States, an association of such citizens, a municipality, or a corporation organized under the laws of the United States or of any State or Territory thereof, (2) all parties holding an interest in the offer are in compliance with 43 CFR 3100 and the leasing authorities, (3) offeror's chargeable interests, direct and indirect, in either public domain or acquired lands do not exceed 200,000 acres in oil and gas options or 246,080 acres in options and leases in the same State, or 300,000 acres in leases and 200,000 acres in options in either leasing District in Alaska, and (4) offeror is not considered a minor under the laws of the State in which the lands covered by this offer are located.

(b) Undersigned agrees that signature to this offer constitutes acceptance of this lease, including all terms, conditions, and stipulations of which offeror has been given notice, and any amendment or separate lease that may include any land described in this offer open to leasing at the time this offer was filed but omitted for any reason from this lease. The offeror further agrees that this offer cannot be withdrawn, either in whole or part, unless the withdrawal is received by the BLM State Office before this lease, an amendment to this lease, or a separate lease, whichever covers the land described in the withdrawal, has been signed on behalf of the United States.

This offer will be rejected and will afford offeror no priority if it is not properly completed and executed in accordance with the regulations, or if it is not accompanied by the required payments. 18 U.S.C. Sec. 1001 makes it a crime for any person knowingly and willfully to make to any Department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

Duly executed this \_\_\_\_\_ day of \_\_\_\_\_, 19\_\_\_\_\_.

(Signature of Lessee or Attorney-in-fact)

## LEASE TERMS

Sec. 1. Rentals—Rentals shall be paid to proper office of lessor in advance of each lease year. Annual rental rates per acre or fraction thereof are:

- (a) Simultaneous noncompetitive lease, \$1.00 for the first 5 years, thereafter, \$3.00;
- (b) Regular noncompetitive lease, \$1.00;
- (c) Competitive lease, \$2.00; or
- (d) Other, see attachment.

If all or part of a noncompetitive leasehold is determined to be within a known geological structure or a favorable petroleum geological province, annual rental shall become \$2.00, beginning with the lease year following notice of such determination. However, a lease that would otherwise be subject to rental of more than \$2.00 shall continue to be subject to the higher rental.

If this lease or a portion thereof is committed to an approved cooperative or unit plan which includes a well capable of producing leased resources, and the plan contains a provision for allocation of production, royalties shall be paid on the production allocated to this lease. However, annual rentals shall continue to be due at the rate specified in (a), (b), (c), or (d) for those lands not within a participating area.

Failure to pay annual rental, if due, on or before the anniversary date of this lease (or next official working day if office is closed) shall automatically terminate this lease by operation of law. Rentals may be waived, reduced, or suspended by the Secretary upon a sufficient showing by lessee.

Sec. 2. Royalties—Royalties shall be paid to proper office of lessor. Royalties shall be computed in accordance with regulations on production removed or sold. Royalty rates are:

- (a) Simultaneous noncompetitive lease, 12 1/2 %;
- (b) Regular noncompetitive lease, 12 1/2 %;
- (c) Competitive lease, see attachment; or
- (d) Other, see attachment.

Lessor reserves the right to specify whether royalty is to be paid in value or in kind, and the right to establish reasonable minimum values on products after giving lessee notice and an opportunity to be heard. When paid in value, royalties shall be due and payable on the last day of the month following the month in which production occurred. When paid in kind, production shall be delivered, unless otherwise agreed to by lessor, in merchantable condition on the premises where produced without cost to lessor. Lessee shall not be required to hold such production in storage beyond the last day of the month following the month in which production occurred, nor shall lessee be held liable for loss or destruction of royalty oil or other products in storage from causes beyond the reasonable control of lessee.

Minimum royalty shall be due for any lease year after discovery in which royalty payments aggregate less than \$1.00 per acre. Lessee shall pay such difference at end of lease year. This minimum royalty may be waived, suspended, or reduced, and the above royalty rates may be reduced, for all or portions of this lease if the Secretary determines that such action is necessary to encourage the greatest ultimate recovery of the leased resources, or is otherwise justified.

An interest charge shall be assessed on late royalty payments or underpayments in accordance with the Federal Oil and Gas Royalty Management Act of 1982 (FOGRMA) (96 Stat. 2447). Lessee shall be liable for royalty payments on oil and gas lost or wasted from a lease site when such loss or waste is due to negligence on the part of the operator, or due to the failure to comply with any rule, regulation, order, or citation issued under FOGRMA or the leasing authority.

Sec. 3. Bonds—Lessee shall file and maintain any bond required under regulations.

Sec. 4. Diligence, rate of development, unitization, and drainage—Lessee shall exercise reasonable diligence in developing and producing, and shall prevent unnecessary damage to, loss of, or waste of leased resources. Lessor reserves right to specify rates of development and production in the public interest and to require lessee to subscribe to a cooperative or unit plan, within 30 days of notice, if deemed necessary for proper development and operation of area, field, or pool embracing these leased lands. Lessee shall drill and produce wells necessary to protect leased lands from drainage or pay compensatory royalty for drainage in amount determined by lessor.

Sec. 5. Documents, evidence, and inspection—Lessee shall file with proper office of lessor, not later than 30 days after effective date thereof, any contract or evidence of other arrangement for sale or disposal of production. At such times and in such form as lessor may prescribe, lessee shall furnish detailed statements showing amounts and quality of all products removed and sold, proceeds therefrom, and amount used for production purposes or unavoidably lost. Lessee may be required to provide plats and schematic diagrams showing development work and improvements, and reports with respect to parties in interest, expenditures, and depreciation costs. In the form prescribed by lessor, lessee shall keep a daily drilling record, a log, information on well surveys and tests, and a record of subsurface investigations and furnish copies to lessor when required. Lessee shall keep open at all reasonable times for inspection by any authorized officer of lessor, the leased premises and all wells, improvements, machinery, and fixtures thereon, and all books, accounts, maps, and records relative to operations, surveys, or investigations on or in the leased lands. Lessee shall maintain copies of all contracts, sales agreements, accounting records, and documentation such as billings, invoices, or similar documentation that

supports costs claimed as manufacturing, preparation, and/or transportation costs. All such records shall be maintained in lessee's accounting offices for future audit by lessor. Lessee shall maintain required records for 6 years after they are generated or, if an audit or investigation is underway, until released of the obligation to maintain such records by lessor.

During existence of this lease, information obtained under this section shall be closed to inspection by the public in accordance with the Freedom of Information Act (5 U.S.C. 552).

Sec. 6. Conduct of operations—Lessee shall conduct operations in a manner that minimizes adverse impacts to the land, air, and water, to cultural, biological, visual, and other resources, and to other land uses or users. Lessee shall take reasonable measures deemed necessary by lessor to accomplish the intent of this section. To the extent consistent with lease rights granted, such measures may include, but are not limited to, modification to siting or design of facilities, timing of operations, and specification of interim and final reclamation measures. Lessor reserves the right to continue existing uses and to authorize future uses upon or in the leased lands, including the approval of easements or rights-of-way. Such uses shall be conditioned so as to prevent unnecessary or unreasonable interference with rights of lessee.

Prior to disturbing the surface of the leased lands, lessee shall contact lessor to be apprised of procedures to be followed and modifications or reclamation measures that may be necessary. Areas to be disturbed may require inventories or special studies to determine the extent of impacts to other resources. Lessee may be required to complete minor inventories or short term special studies under guidelines provided by lessor. If in the conduct of operations, threatened or endangered species, objects of historic or scientific interest, or substantial unanticipated environmental effects are observed, lessee shall immediately contact lessor. Lessee shall cease any operations that would result in the destruction of such species or objects.

Sec. 7. Mining operations—To the extent that impacts from mining operations would be substantially different or greater than those associated with normal drilling operations, lessor reserves the right to deny approval of such operations.

Sec. 8. Extraction of helium—Lessor reserves the option of extracting or having extracted helium from gas production in a manner specified and by means provided by lessor at no expense or loss to lessee or owner of the gas. Lessee shall include in any contract or sale of gas the provisions of this section.

Sec. 9. Damages to property—Lessee shall pay lessor for damage to lessor's improvements, and shall save and hold lessor harmless from all claims for damage or harm to persons or property as a result of lease operations.

Sec. 10. Protection of diverse interests and equal opportunity—Lessee shall pay when due all taxes legally assessed and levied under laws of the State or the United States, accord all employees complete freedom of purchase, pay all wages at least twice each month in lawful money of the United States, maintain a safe working environment in accordance with standard industry practices, and take measures necessary to protect the health and safety of the public.

Lessor reserves the right to ensure that production is sold at reasonable prices and to prevent monopoly. If lessee operates a pipeline, or owns controlling interest in a pipeline or a company operating a pipeline, which may be operated accessible to oil derived from these leased lands, lessee shall comply with section 28 of the Mineral Leasing Act of 1920.

Lessee shall comply with Executive Order No. 11246 of September 24, 1965, as amended, and regulations and relevant orders of the Secretary of Labor issued pursuant thereto. Neither lessee nor lessee's subcontractors shall maintain segregated facilities.

Sec. 11. Transfer of lease interests and relinquishment of lease—As required by regulations, lessee shall file with lessor any assignment or other transfer of an interest in this lease. Lessee may relinquish this lease or any legal subdivision by filing in the proper office a written relinquishment, which shall be effective as of the date of filing, subject to the continued obligation of the lessee and surety to pay all accrued rentals and royalties.

Sec. 12. Delivery of premises—At such time as all or portions of this lease are returned to lessor, lessee shall place affected wells in condition for suspension or abandonment, reclaim the land as specified by lessor and, within a reasonable period of time, remove equipment and improvements not deemed necessary by lessor for preservation of producible wells.

Sec. 13. Proceedings in case of default—If lessee fails to comply with any provisions of this lease, and the noncompliance continues for 30 days after written notice thereof, this lease shall be subject to cancellation. Lessee shall also be subject to applicable provisions and penalties of FOGRMA (96 Stat. 2447). However, if this lease includes land known to contain valuable deposits of leased resources, it may be cancelled only by judicial proceedings. This provision shall not be construed to prevent the exercise by lessor of any other legal and equitable remedy, including waiver of the default. Any such remedy or waiver shall not prevent later cancellation for the same default occurring at any other time.

Sec. 14. Heirs and successors in interest—Each obligation of this lease shall extend to and be binding upon, and every benefit hereof shall inure to the heirs, executors, administrators, successors, beneficiaries, or assignees of the respective parties hereto.



relative resource values change, or in the event that the lessee demonstrates that operations can be conducted without causing unacceptable impacts.

The existing and proposed fluid leasing stipulations to be used in the alternatives follow in this appendix. There are seven existing SRA stipulations (Soc-1 through Soc-7) and two State of New Mexico stipulations (NM-5 and NM-7) currently being used in the SRA. For the purpose of this document, to avoid repetitious verbiage, and to be more concise, a set of four new fluid leasing stipulations has been developed. One State of New Mexico stipulation (NM-5) has also been carried forward.

The process through which the 30 Special Management Areas (SMAs) were identified included, by alternative, special stipulations to protect their values from fluid minerals leasing and development.

The analysis of potential impacts on fluid leasing, by alternative, was done on an interdisciplinary basis. The rationale through which stipulations were assigned consisted of consideration of the resource value, consideration of the fluid mineral potential, and a determination as to which constraints could afford maximum protection while allowing for fluid mineral development. In those areas where resource values and fluid mineral exploration and development were found to be mutually exclusive, and where protection of resource values was clearly in the public interest, the No Surface Occupancy stipulation was assigned.

Public lands may be affected by discretionary and nondiscretionary closures which are presented in a lease as special stipulations. A discretionary closure includes those lands where the BLM has determined that oil, gas, and/or geothermal leasing, even with the most restrictive stipulations (including No Surface Occupancy for the entire leasehold), would not adequately protect other resources, values, or land uses. An example of this type of closure would be the Ladrón Mountain area in northwestern Socorro County. Nondiscretionary closures include those lands that must be closed to oil, gas, and/or geothermal leasing

for reasons beyond the discretion of the BLM. These are lands specifically precluded from fluid mineral leasing by law, regulations, Secretarial or Executive Order, or that have been otherwise formally closed by decisions reached beyond the scope of the BLM. The White Sands Missile Range (WSMR) military area is excluded from leasing by a nondiscretionary closure.

Lands which are currently under lease will not be affected by special stipulations identified under the Balanced, Conservation, and Production Alternatives. New leases for lands which are contained in SMAs will contain the special stipulation or stipulations designated in the selected alternative.

Activities normally deferred to activity planning, or other planning completed subsequent to the RMP, include drill site location; field development and facility layout plans; unitization and communitization plans; transportation, power or pipeline routing plans (other than for major designated corridors); and others. Many of these activities are addressed after an Application for Permit to Drill (APD) is received. Between one and three APDs are expected per year for the life of this RMP.

All future geophysical exploration, leasing, and development proposals are to be reviewed for conformance with the RMP to ensure the availability of land for these activities and to ensure compliance with applicable mitigating measures as identified in the RMP. In certain cases geophysical exploration may be restricted or excluded. Any site-specific reviews required by operating orders, regulations, or to ensure NEPA compliance will also need to be performed at appropriate times.

#### EXISTING FLUID LEASING STIPULATIONS

The following stipulations would be utilized under Alternative A.

Soc-1: Watersheds subject to critical erosion.

In order to minimize damage in watersheds classified as having critical erosion potential, off-road use and any surface disturbance will be allowed only after

close coordination and explicit written concurrence of the authorized officer of the Federal surface management agency.

Soc-2: Areas with known threatened and endangered (T&E) plant species.

The lessee is given notice that all or portions of the lease area contain special values, are needed for special purposes or require special attention to prevent damage to surface resources. All surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a surface use and operations plan, which is satisfactory to the U.S. Geological Survey (USGS) and the surface management agency, for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operation of producing oil and gas wells.

After the surface management agency has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the surface management agency will furnish further data on such areas.

Soc-3: Area with commercial quality timber.

In order to minimize disruption of commercial quality ponderosa pine stands and to facilitate future management of the timber resource, exploration, drilling, and other development activity will be allowed only after coordination with and written approval of the surface management agency. Exceptions to this limitation may be specifically authorized in writing by the Supervisor of the USGS with the written concurrence of the surface management agency.

Soc-4: Areas with known habitat for T&E species.

The lessee is given notice that all or portions of the lease area contain special

values, are needed for special purposes or require special attention to prevent damage to surface resources. All surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a surface use and operations plan, which is satisfactory to the USGS and the surface management agency, for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operation of producing oil and gas wells.

After the surface management agency has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the surface management agency will furnish further data on such areas.

Soc-5: Areas with Class I or Class II visual resource values.

All or part of the lands in this lease are included in a potential Area of Critical Environmental Concern (ACEC) for visual resources. No surface disturbing activities will be allowed which strongly impact scenic values (form, line, color, texture) without prior written approval of the authorized officer of the surface management agency.

Soc-6: Areas with cultural resources which have been, or have potential to be, designated for the National Register of Historic Places.

The lessee is given notice that all or portions of the lease area contain special values, are needed for special purposes or require special attention to prevent damage to surface resources. All surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the



lessee/operator submits a surface use and operations plan, which is satisfactory to the USGS and the surface management agency, for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operation of producing oil and gas wells.

After the surface management agency has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the surface management agency will furnish further data on such areas.

Soc-7: Lands classified under the Classification and Multiple Use (C&MU) Act or the Recreation and Public Purposes (R&PP) Act.

The lessee is given notice that all or portions of the lease area contain special values, are needed for special purposes or require special attention to prevent damage to surface resources. All surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a surface use and operations plan, which is satisfactory to the USGS and the surface management agency, for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operation of producing oil and gas wells.

After the surface management agency has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the surface management agency will furnish further data on such areas.

NM-5: Lands within the White Sands Missile Range Extension Area.

Missile firing shutdown - The lease is located within the White Sands Missile

Range (WSMR) Extension Area. Persons operating the leasehold will be requested to evacuate the leasehold on those days that missiles are being fired.

NM-7: Wilderness Protection Stipulation.

By accepting this lease, the lessee acknowledges that the lands described in this lease are being inventoried or evaluated for their wilderness potential by the BLM under Section 603 of the Federal Land Policy and Management Act of 1976, 90 Stat. 2743 (43 USC Sec. 1782), and that exploration or production activities which are not in conformity with Section 603 may never be permitted. Expenditures in leases on which exploration drilling or production are not allowed will create no additional rights in the lease, and such leases will expire in accordance with law.

Activities will be permitted under the lease so long as BLM determines they will not impair wilderness suitability. This will be the case either until the BLM wilderness inventory process has resulted in a final wilderness inventory decision that an area lacks wilderness characteristics, or in the case of a wilderness study area until Congress has decided not to designate the lands included within this lease as wilderness. Activities will be considered nonimpairing if the BLM determines that they meet each of the following three criteria:

(a) It is temporary. This means that the use or activity may continue until the time when it must be terminated in order to meet the reclamation requirement of paragraphs (b) and (c) below. A temporary use that creates no new surface disturbance may continue unless Congress designated the area as wilderness, so long as it can easily and immediately be terminated at that time, if necessary to management of the area as wilderness.

(b) Any temporary impacts caused by the activity must, at a minimum, be capable of being reclaimed to a condition of being

substantially unnoticeable in the wilderness study area (or inventory unit) as a whole by the time the Secretary of the Interior is scheduled to send his recommendations on that area to the President, and the operator will be required to reclaim the impacts to that standard by that date. If the wilderness study is postponed, the reclamation deadline will be changed. A full schedule of wilderness studies will be developed by the department upon completion of the intensive wilderness inventory. In the meantime, in areas not yet scheduled for wilderness study, the reclamation will be scheduled for completion within 4 years after approval of the activity. (Obviously, if and when the Interim Management Policy ceases to apply to an inventory unit dropped from wilderness review following a final wilderness inventory decision of the BLM State Director, the reclamation deadline previously specified will cease to apply). The Secretary's schedule for transmitting his recommendations to the President will not be changed as a result of any unexpected inability to complete the reclamation by the specified date, and such inability will not constrain the Secretary's recommendations with respect to the area's suitability or unsuitability for preservation as wilderness.

The reclamation will, to the extent practicable, be done while the activity is in progress. Reclamation will include the complete recontouring of all cuts and fills to blend with the natural topography, the replacement of topsoil, and the restoration of plant cover at least to the point where natural succession is occurring. Plant cover will be restored by means of reseeding or replanting, using species previously occurring in the area. If necessary, a temporary watering system will be required. The reclamation schedules will be based on conservation assumptions with regard to growing conditions, so as to ensure that the reclamation will be complete, and the impacts will be

substantially unnoticeable in the area as a whole, by the time the Secretary is scheduled to send his recommendations to the President. ("substantially unnoticeable" is defined in Appendix F of the Interim Management Policy and Guidelines for Lands under Wilderness Review).

(c) When the activity is terminated, and after any needed reclamation is complete, the area's wilderness values for other purposes, as to significantly constrain the Secretary's recommendation with respect to the area's suitability or unsuitability for preservation as wilderness. The wilderness values to be considered are those mentioned in Section 2(c) of the Wilderness Act, including naturalness, outstanding opportunities for solitude or for primitive and unconfined recreation, and ecological, geological or other features of scientific, educational, scenic, or historical value. If all or any part of the area included within the leasehold estate is formally designated by Congress as wilderness, exploration and development operations taking place or to take place on the part of the lease will remain subject to the requirements of this stipulation, except as modified by the Act of Congress designating the land as wilderness. If Congress does not specify in such act how existing leases like this one will be managed, then the provisions of the Wilderness Act of 1964 will apply, as implemented by rules and regulations promulgated by the Department of the Interior.

#### PROPOSED FLUID LEASING STIPULATIONS

SRA-1: In order to (choose from A, B, or C below), off-road vehicular use or other surface disturbance on all or portions of the lands described in this lease will be allowed only when specifically approved in writing by the authorized officer of the BLM.

A. Minimize damage to watersheds classified as having critical erosion potential.



B. Prevent damage to cultural resources.

C. Minimize damages to other resources as may be necessary.

SRA-2: In order to (choose from A or B below), surface disturbing activities will be allowed only during the period (time period). Exceptions to this limitation in any year may be specifically authorized in writing by the authorized office of the BLM. Lands within the leased area to which this stipulation applies are described as follows: (insert legal descriptions)

A. Minimize disruption of critical seasonal wildlife habitat (\* Type of Habitat).

- \* Type of Habitat
- 1. Antelope fawning ground.
- 2. Bald eagle wintering area.
- 3. Elk calving ground.
- 4. Other habitat as required.

B. Minimize undue or unnecessary surface degradation due to use under seasonal adverse weather conditions.

SRA-3: No occupancy or other activity on the surface of the following described lands, is allowed in order to protect: (see below) (insert legal descriptions)

- A. Ecological study plots.
- B. Demonstration areas.
- C. Cultural resources.
- D. Other resources values.

SRA-4: The lessee is given notice that; (a) all or part of the lease area contains special values, (b) is needed for special purposes or (c) requires special attention to prevent damage to surface resources. Any surface use or occupancy within such areas will be strictly controlled. Use or occupancy will be authorized only when the lessee/operator demonstrates that the area is essential for operations and when the lessee/operator submits a surface use and operations plan which is satisfactory to the BLM for the protection of these special values and existing or planned uses. Appropriate modifications to the imposed restrictions will be made for the maintenance and operations of producing oil and gas wells.

After the BLM has been advised of the proposed surface use or occupancy on these lands, and on request of the lessee/operator, the BLM will furnish further data on such areas. (insert legal descriptions)

Reason(s) for Restriction: (choose one or more)

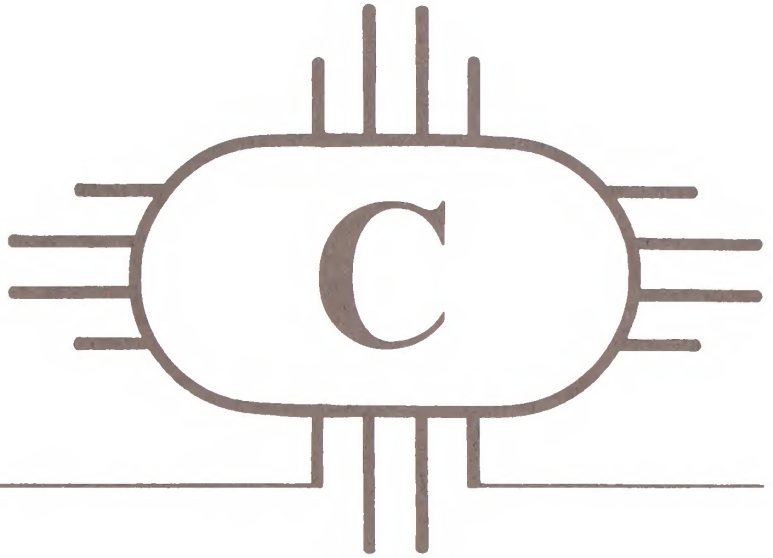
- A. Special resource values.
- B. Seasonal restrictions.

Duration of Restriction:

NM-5: All or portions of the land contained in this lease are located within the WSMR Safety Evacuation Area and shall be evacuated on those days that missiles are to be fired. Prior to beginning exploration activities, the lessee shall contact the Corps of Engineers in Albuquerque and the Master Planning Branch at WSMR in order to be advised of the terms of the safety evacuation agreement and missile firing schedules.







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Rangeland

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SOCORRO RESOURCE AREA  
ALLOTMENT CATEGORIZATION

	CATEGORY M (Maintain)	CATEGORY I (Improve)	CATEGORY C (Custodial)
MANAGEMENT OBJECTIVES	--Maintain or improve existing situation.	--Improve existing resource conditions.	--Prevent deterioration and manage in a custodial manner.
GENERAL CHARACTERISTICS	--Present ecological range condition is satisfactory. --Present management is satisfactory. --Moderate to high potential for vegetative production and is producing near potential. --Limited or no resource conflicts exist with livestock grazing. --Land status may or may not be considered (includes low percentage of public lands, scattered tracts, or checkerboard land patterns within allotments). --Positive return on investment exists.	--Present ecological range condition is unsatisfactory. --Trend is apparently downward. --Present management practices are inadequate to meet long-term objectives. --Moderate to high potential for vegetative production and is producing at low to fair levels. --Resource conflicts are evident with livestock grazing. --Land status may or may not be considered (similar to Category M). --Positive economic return on public investment exists.	--Present ecological range condition is variable. --Vegetative production is relatively low. --Limited potential for improvement. --Limited or no resource conflicts exist with livestock grazing. --No positive return on investment is likely.
CATEGORY CRITERIA	--An allotment must meet all of the following conditions: 1. Has no significant resource conflicts. 2. Has only a moderate potential for improvement in forage production. 3. Has a range condition of 40 or higher and a static or improving range trend.	--An allotment must meet any one of the following 3 conditions: 1. Has a potentially significant resource conflict. 2. Has a high to medium potential for improvement in vegetation. 3. Has a range condition rating of 50 or less and a static or declining range trend.	--An allotment must meet all of the following conditions: 1. Has a low potential for improvement in forage production. 2. Has no significant resource conflicts.
	<u>OTHER CONSIDERATIONS</u> Contains 30 percent or more public land or more than 1,540 acres public land.	<u>OTHER CONSIDERATIONS</u> Contains 30 percent or more public land or more than 1,540 acres public land.	<u>OTHER CONSIDERATIONS</u> Contains less than 30 percent public land or less than 1,540 acres public land.
NOTE: Any parcel of public land, regardless of size, with an identified significant resource conflict, will qualify for the "I" category.			
MANAGEMENT ACTIONS	--Livestock use would remain the same or may be increased. --High degree of management flexibility through consultation. --Low intensity supervision and monitoring. --Range improvements by private investment and range betterment funds. --Development of management plans.	--Livestock use may increase or could be decreased to meet objectives. --Proposals for resolving identified issues and conflicts include: 1. Season of use management. 2. Change in class or kind of livestock. 3. Adjust numbers of livestock. 4. Distribution management, through range improvements or use of salt/supplement. 5. Development of management plans. --High intensity supervision and monitoring.	--Livestock use would remain the same, be excluded or authorized on a seasonal basis. --High degree of management flexibility. --Low intensity supervision and monitoring. --Range improvements by private investment and range betterment funds. --Development of management plans.

TABLE C-1  
PRESENT ALLOTMENT STATUS AND CATEGORY  
BY ENVIRONMENTAL IMPACT STATEMENT

ALOT NO.	ALLOTMENT NAME	TOTAL PREFERENCE	WILDLIFE AUM	TYPE* OF MGT CATEGORY	MGT
EAST SOCORRO GRAZING ES					
1106	OJO SALADITO	1562	22		M
1112	RILEY COMM	30	4		M
		50	0		M
		156	0		M
1116	PUERTECITO BARRANCO	1295	38	1	M
1117	CANON BONITO	408	5		M
1121	RIO SALADO WEST	756	15		M
1122	ABEYTAS	300	0	1	M
1123	ABEYTAS	48	0	1	M
1136	RIO PUERCO	1176	2	1	M
1137	NORTH LADRON	1464	39	1	M
1140	MONTE NEGRO	480	0		M
1143	COMANCHE ARROYO	24	0		I
1145	D CROSS MOUNTAIN	356	5		M
1158	CANON ALAMITO	720	6	1	M
1159	LA JENCIA CREEK	1992	67	1	I
1177	LADRON PEAK	444	36	1	M
1181	LOPEZ COMMUNITY	325	0	1	M
		575	5	1	M
1186	WEST LADRON	2460	67		M
1191	CANADA COLORADO	720	4	1	I
1250	BUFFALO HEAD	144	0		I
1251	HARLESS	1428	50		M
1252	SILVER ROAD	1607	44		I
1253	SAND SAGE	240	15	1	I
1254	BORDO ATRAVESADO	2714	63	1	I
1255	BOSQUECITO	312	15		I
1256	LLANO	612	25		M
1257	ANTELOPE WELL	48	0		M
1258	TIO BARTOLO	365	13		M
1259	FOUR HILLS	360	16		I
1260	SIERRA LARGA	2112	52		M
1261	SCOTT RANCH	2186	51	1	M
1262	LAS CANAS	1560	52		I
1263	BLACK MESA	1446	53		I
1264	ARMIJO COMMUNITY	975	26		I
1265	NICKMAN RANCH	84	0		M
1266	COYOTE SPRING	1512	28		M
1267	VL RANCH	384	10		M
1268	RYAN HILL	246	5		M
1269	TORREON COMM	976	20		M
		2822	133		M
1270	MILLIGAN GULCH	485	38		C
1271	MESA REDONDA	1704	62		M
1272	SAN PASQUAL	1836	24		M
1273	BRUTON RIVER	1800	0		M



TABLE C-1  
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BY ENVIRONMENTAL IMPACT STATEMENT

ALOT NO.	ALLOTMENT NAME	TOTAL PREFERENCE	WILDLIFE AUM	TYPE* OF MGT	MGT CATEGORY
EAST SUCORRO GRAZING ES					
1274	ROCK CREEK	230	12		C
1275	OSCURA	5182	326		M
1276	FOUR SECTIONS	362	11	1	M
1277	SAN JOSE CANYON	2131	50	1	I
1278	ANAYA WELL	348	0		I
1279	SILVER CANYON	1337	40	1	I
1280	TECOLOTE DRAW	2308	43	1	I
1281	SO RANCH	696	38		M
1282	BINGHAM	60	5		M
1283	BLACKINGTON MOUNTAIN	1572	39	1	I
1284	MESA WELL CANYON	1287	36	1	I
1285	SAND MOUNTAIN	1884	43		M
1286	BLACKINGTON MTN WEST	312	0		M
1287	ARROYO DEL TAJO	264	11	1	M
1288	RIO GRANDE	264	11	1	I
1289	JORNADA COMMUNITY	72	0		M
		84	0		M
		96	5		M
		144	0		M
		300	14		M
		600	27		M
		1032	24		M
1290	ROCK SPRINGS CANYON	1344	83		M
1291	PRAIRIE SPRING	1536	17		M
1292	CHAUNTE CANYON	543	0		M
1293	MALPAIS	5427	67		M
1294	NOGAL CANYON	46	59		M
1295	ANTELOPE WELL	924	49		M
1297	PUERTECITO DEL LEMIT	1233	30	1	M
1298	WINEGLASS	690	23	1	M
1299	PERUENO	422	30	1	C
1300	CASAS DE PIEDRAS	313	8	1	M
1301	WHITE SAGE	4727	85		M
1302	SO RANCH	544	0		M
1305	CHATO	50	1		M
1306	VERANITO	445	13		M
1308	SAN ANTONITO	146	12	1	I
1309	S MESA REDONDA	684	0		M
1310	CHUPADERA WASH	525	7		M
1312	LA ARENOSA	535	21	1	I
1315	POLVADERA	102	6		C
1317	SAN PEDRO	240	29	1	I
1318	PUEBLITO COMMUNITY	24	0		C
		34	11		C
1321	PUERTECITO GAP	659	27		M
1322	PARIDA	1248	46	1	M

TABLE C-1  
PRESENT ALLOTMENT STATUS AND CATEGORY  
BY ENVIRONMENTAL IMPACT STATEMENT

ALOT NO.	ALLOTMENT NAME	TOTAL PREFERENCE	WILDLIFE AUM	TYPE* OF MGT CATEGORY	MGT
EAST SOCORRO GRAZING ES					
1323	WATER CANYON	1008	74		M
1324	WATER CANYON	240	17		M
1327	CEDAR PASS	1035	37	1	M
1328	JONES	912	11		M
1329	LAS LOMAS	240	8		M
1330	EAST WELL	461	26		M
1339	TWIN TANKS	65	0		M
1340	TWIN TANKS	155	10		M
1341	SCHOLLE	23	0		M
1342	CERRO PELON	300	10		M
1343	ARO	144	10		M
1344	LA JENCIA RANCH	720	0		M
1345	HICKMAN RANCH	96	5		M
1346	LA JENCIA RANCH	21	0		M
1347	BLUE SPRINGS	15	3		M
1348	CERRO MONTOSO	407	7		M
1349	DRIPPING SPRINGS	234	4		M
1350	VIEJO ARROYO	237	7		M
1351	RIENHARDT INDIV	228	7		M
1352	U BUTTE	624	19		M
1353	RED TANKS CANYON	276	7		M
1354	GRANITE MTN	13	0		M
1356	TIP TOP	24	2		M
1361	BRUSHY MOUNTAIN	166	2		M
WEST SOCORRO EIS					
0001	TWIN PEAKS	134	3		M
0002	QUALLS	120	0		M
0003	QUALLS	132	0		M
0004	CRISWELL	373	0		M
0005	HORSE SPRINGS	180	0		M
0006	CRISWELL	8	0		M
0007	MCBROOM	180	1	1	M
0008	LAPP RANCH	780	8		M
0009	SULLIVAN	408	4		M
0010	KELLOG CANYON	2448	15		I
0011	ORONA COMMUNITY	1152	2	1	I
0012	KELLOG CANYON	144	0		I
0013	STOCK DRIVEWAY	221	5		M
0014	HALF CIRCLE D	72	0		M
0015	UPPER PATTERSON CANY	72	0		M
0016	JONES PLACE	144	9	3	M
0017	PATTERSON CANYON	221	5		M
0018	TEJANA MESA	1128	67		M
0019	SALT LAKE EAST	120	2		M
0020	WILBUR WADLEY DRAW	96	2		M



TABLE C-1  
PRESENT ALLOTMENT STATUS AND CATEGORY  
BY ENVIRONMENTAL IMPACT STATEMENT

ALOT NO.	ALLOTMENT NAME	TOTAL PREFERENCE	WILDLIFE AUM	TYPE* OF MGT CATEGORY	MGT
WEST SOCORRO EIS					
0021	SAN IGNACIO CREEK	960	2	1	I
0022	AUGUSTINE	197	5		M
0023	BOX LAKE	2688	29	1	M
0024	COYOTE CANYON	2448	124 **		M
0025	COW SPRINGS	1332	7	1	I
0026	MORINE WHITE	240	57		M
0027	BURNETT	108	1		M
0028	Y RANCH	3993	234 ***	2	I
0029	CROSS LINE	1152	8		M
0030	BUTLER	864	7		M
0031	ARROYO BACA	111	2	1	I
0032	ADOBE RANCH	7020	147		I
0033	CASTILLO MANGAS	132	2		M
0034	F E CHAVEZ	168	2	1	M
0035	MESA RANCH	504	7		M
0036	SALT LAKE WEST	12	0		M
0037	WILBUR WADLEY DRAW	180	0		M
0038	RED HILL SOUTH	1716	14	1	M
0039	PEDRO A CHAVEZ EST	12	0		M
0040	COYOTE CANYON	36	0		M
0041	RICHARD M CHAVEZ	360	2		I
0042	RITO CREEK	60	36		M
0043	ZUNI PLATEAU	540	260		M
0044	GOAT RANCH	720	7		M
0045	DAVILA SALT LAKE N	36	0		M
0046	WALKER	1017	60	1	M
0047	DURFEE	1392	10	1	M
0048	CURTIS RANCH	864	4		M
0049	BACA SPRING	76	0		M
0050	EAGAR RED HILL	864	8	1	M
0051	EMERY	836	6	1	I
0053	LYNCH RANCH	1764	28		I
0054	SHAW CANYON	6936	300 ****		M
0055	KICHNE PLACE	552	3		M
0056	HQ	2340	25		I
0057	CARRIZO CREEK N	1536	8		M
0058	MORINE WHITE	3600	6		M
0059	ADOBE RANCH	240	0		M
0060	LEANDRO WELL	508	4	1	I
0061	MARIANO HILL	60	2		M
0062	RED HILL NORTH	1243	7		M
0063	ANDERSON PEAK	900	23		M
0064	EVANS WELL	478	9		M
0065	ZUNI PLATEAU	32	0		M
0066	WHITewater CANYON	276	13		M
0067	EAST RITO CREEK	540	2		M
0068	PANTHER CANYON	192	8		M
0069	CERRO PRIETO	538	38		M
0070	RANCHO ALEGRE	11080	105	1	M
0071	NORTH FORK ALAMOCITO	312	4		M

TABLE C-1  
PRESENT ALLOTMENT STATUS AND CATEGORY  
BY ENVIRONMENTAL IMPACT STATEMENT

ALOT NO.	ALLOTMENT NAME	TOTAL PREFERENCE	WILDLIFE AUM	TYPE* OF MGT	MGT CATEGORY
WEST SOCORRO EIS					
0072	MANGAS RANCH	2328	2		M
0073	HEAVENLY ACRES	192	6		M
0074	CROSBY CANYON	72	3		M
0075	DAVILA SALT LAKE S	48	6		M
0076	SANTA RITA	9	0		M
0077	EMERY	96	0	1	I
0078	PATTERSON	1804	12		M
0079	STOKES FLAT	2400	18		I
0080	BOX CAR 7	111	6	1	M
0081	LYNCH RANCH	2100	24		I
0082	C BAR N	240	2		M
0083	CAT MOUNTAIN	240	0		M
0084	PAUL LUND	204	21	1	I
0085	PATTERSON CANYON	192	17		I
0086	CAT MOUNTAIN	144	0		M
0087	COTTONWOOD SPRING	31	47		M
0088	MARIANO MESA RANCH	69	4	1	I
0089	LEANDRO WELL	18	0	1	I
0090	PANTHER CANYON	31	0		M
0091	CERRO PRIETO	24	0		M
0092	AGUA FRIA CREEK	3780	17	1	M
0093	TRES MONTOSAS	444	14		M
0094	ESCONDIDO CREEK	1488	13	1	I
0095	DATIL AIRSTRIIP	48	0		M
0096	MAYES WASH	912	11		M
0097	TANQUE DE CADALLOS	103	2		M
0098	CHAVEZ RANCH	70	14	1	I
0099	FLORENIO ORONA	420	4	1	I
0100	GATLIN LAKE	576	8	1	I
0101	CHIHUAHUA LAKE	2364	20	1	I
0102	ORONA LARGO CREEK	708	53		M
0103	LOPEZ DRAW	228	4		M
0104	PUEBLITO RANCH	48	0		M
0105	NORTH FORK ALAMOCITO	24	0		M
0106	SANTA RITA	3300	44		I
0107	SUMMERS COMMUNITY	1787	3		M
0108	REYNOLDS	132	2		M
0109	PATTYS HOLE	852	17		M
0110	W HORSE MT	672	3		I
0111	E HORSE MT	240	3	1	I
0112	HERMAN SANCHEZ	312	2	1	I
0113	CROSBY CANYON	3	0		M
0114	DATIL AIRSTRIIP	3	0		M
0115	MCDROOM	168	0	1	M
0116	SPRING CANYON RANCH	514	3	1	I
0117	N FOX MOUNTAIN	108	2		M
0118	ALAMITO RANCH	6	0		M
0119	SPEARS HOME	444	6		M
0120	ARAGON WELL	264	2		M
0121	ORONA LARGO CREEK	24	0		M



TABLE C-1  
PRESENT ALLOTMENT STATUS AND CATEGORY  
BY ENVIRONMENTAL IMPACT STATEMENT

ALOT NO.	ALLOTMENT NAME	TOTAL PREFERENCE	WILDLIFE AUM	TYPE* OF MGT	MGT CATEGORY
WEST SOCORRO EIS					
0122	EAST CRISWELL	336	0		M
0123	GOAT TANK CANYON	288	4		M
0124	HALE WELL	6	0		M
0125	N HORSE MT	72	2		M
0126	LIMESTONE CANYON	1875	65	1	I
0127	FOX MOUNTAIN	156	1		M
0128	WILLIAMS HOME	48	0		M
0129	R M CHAVEZ	60	0		M
0130	DIAMOND X	168	2		M
0131	BOX CAR S	84	1	1	M
0132	W RANCH	48	0		M
0133	TRES LAGUNAS	288	2		M
0134	COAL CANYON	60	0		M
0135	BILL G & W F GREEN	252	2		M
0136	SILVER CREEK	1284	44	1	I
0137	PIETOWN DIKE	55	0		M
0138	IRON MOUNTAIN	132	7		M
0139	PIETOWN TR 15	8	0		M
0140	LEHEW	144	0		M
0141	SAWTOOTH MOUNTAIN	120	0		M
0142	OAK SPRINGS	36	0		M
0143	N HORSE MT	48	0		M
0144	NM AZ STATE LINE	48	0		M
0145	HALE WELL	228	11	1	I
0146	MONTICELLO CANYON	72	5		M
0147	KINSELY CANYON	120	5		M
0148	WAIHO RANCH	1503	47	1	M
0149	WILLIAMSON	60	10		M
0150	CAT LAKE	180	2		M
0151	MONTOLA	156	24	1	I
0152	WHITEWATER CANYON	24	0		M
0153	E SLADE	972	7		M
0164	LEW DANIELS	12	0		M
0165	SNAKE HILL	487	29		M
0166	OLGUIN DRAW	96	13		I
0167	HQ	120	0		I
0168	TARPLEY WELL	96	0		M
0192	W EMERY	36	0		M
0194	N Q WELL	311	19		M

\*1=ALLOTMENT MANAGEMENT PLAN

2=EXPERIMENTAL STEWARDSHIP PLAN

3=GRAZING SYSTEM

\*\*=ALLOTMENT NO. 0024 - 78 AUMS, WINTER FORAGE FOR ELK

\*\*\*=ALLOTMENT NO. 0028 - 155 AUMS, WINTER FORAGE FOR ELK

\*\*\*\*=ALLOTMENT NO. 0054 - 155 AUMS, WINTER FORAGE FOR ELK

TABLE C-2

LIVESTOCK GRAZING BY ALTERNATIVE  
FOR CHUPADERA MESA ALLOTMENTS

ALLOTMENT NUMBER	NAME	EXISTING PREFERENCE AUMS	ALTERNATIVE	IMPLEMENT AMP	CHANGE IN FORAGE AUMS	VEG. LAND TREATMENTS(ac)		PIPELINE (mi.)	FENCE (mi.)	WELLS (no.)
						CHEMICAL	BURNING/MECHANICAL			
1365	BLACK HILLS RANCH	6696	A	Existing	134	0	0	0	0	0
			B	Revise	545	450	150	3	8	0
			C	Revise	-414	150	50	3	0	0
			D	Revise	730	800	350	5	8	0
1366	DRAG00 TANK	1968	A	No	39	0	0	0	0	0
			B	Yes	268	640	140	3	4	0
			C	No	-113	140	60	3	0	0
			D	Yes	348	960	340	5	7	0
1367	LOBO CANYON	2762	A	No	55	0	0	0	0	0
			B	Yes	178	100	200	0	5	0
			C	No	- 55	0	140	2	0	0
			D	Yes	298	450	300	2	7	0
1368	CHUPADERA MESA	7776	A	No	156	0	0	0	0	0
			B	Yes	489	700	240	7	4	1
			C	Yes	-466	150	100	7	0	1
			D	Yes	689	1100	400	8	0	1
1369	LINCOLN COUNTY	132	A	No	3	0	0	0	0	0
			B	No	3	0	0	0	0	0
			C	No	-3	0	0	0	0	0
			D	Yes	3	0	0	0	0	0
1370	CAT MESA EAST	1218	A	No	24	0	0	0	0	0
			B	Yes	111	100	100	2	0	0
			C	Yes	- 61	0	100	2	0	0
			D	Yes	211	300	200	2	0	0
1371	CUATE CANYON	858	A	No	17	0	0	0	0	0
			B	Yes	83	80	80	0	4	0
			C	No	- 57	80	80	0	0	0
			D	Yes	118	150	100	2	4	0



TABLE C-2  
LIVESTOCK GRAZING BY ALTERNATIVE  
FOR CHUPADERA MESA ALLOTMENTS (continued)

ALLOTMENT NUMBER	EXISTING PREFERENCE AUMS	ALLOTMENT NAME	ALTERNATIVE	IMPLEMENT AMP	CHANGE IN FORAGE AUMS	VEG. LAND TREATMENTS(ac)		PIPELINE (mi.)	FENCE (mi.)	WELLS (no.)
						CHEMICAL	BURNING/MECHANICAL			
1372		LARGO CANYON	2377	A Existing	48	0	0	0	0	0
				B Revise	161	100	150	5	0	0
				C Revise	-119	0	100	5	0	0
				D Revise	286	450	250	5	4	0
1373		CARRIZOZO	2160	A No	43	0	0	0	0	0
				B Yes	298	400	240	0	0	0
				C Yes	-203	200	100	0	0	0
				D Yes	387	600	300	0	0	0
1374		RED LAKE	48	A No	1	0	0	0	0	0
				B No	1	0	0	0	0	0
				C No	-1	0	0	0	0	0
				D No	1	0	0	0	0	0
1375		HARVEY INVESTMENT	192	A No	4	0	0	0	0	0
				B No	4	0	0	0	0	0
				C No	-4	0	0	0	0	0
				D Yes	10	0	0	0	0	0
1376		GALLACHER NORTH	1821	A No	36	0	0	0	0	0
				B Yes	131	200	100	3	4	0
				C Yes	-91	0	100	3	0	0
				D Yes	171	300	200	5	8	0

1/ - AUM change based on: 1) Five percent in AUMs due to intensive management, 2 percent increase on non-AMPs; 2) Twofold increase in production was assumed from chemical treatment of snakeweed areas; no increase given to burning or spot treatments of herbicide and; Alternative C represents net loss of AUMs to livestock from vegetative land treatments and management until wildlife needs are met.

## SOIL/VEGETATION INVENTORY METHODOLOGY

### Soil Survey Baseline Data

In 1984 the SCS completed the field work of a third order soil survey of Socorro County. The results of the survey will be published at a future date and a copy of the document is available for review at the SRA Office.

Soil map units were identified, described, and displayed on aerial photographs. Range sites are also correlated to soil map units and given an average percentage composition within the soil unit. Table C-3 provides a sample showing the correlation of the range sites to soil map units.

### Vegetation Inventory

The Chupadera Mesa area was inventoried during the fall of 1985 using the Range Site Inventory Procedure (BLM H-4410-1) and procedures from the SCS National Range Handbook.

Aerial photographs, displaying the soil map units, a table showing the correlation of soil map units and range sites (see Table C-3), and the range site technical guides were used in the field to delineate range sites. Mapping was done on the aerial photographs displaying the soil map units.

After range sites were mapped, other information, i.e., vegetation subtype or aspect, was gathered and recorded. Range sites having different vegetation subtypes were mapped into smaller units. The smallest units of range sites being called site write-up areas or SWAs.

Transect data consisted of vegetation production by plant species, percent composition, soil surface factors (SSF), and ground cover. Ground cover included vegetation species, litter, bare ground, and large and small rocks.

Data was collected from a minimum of one 100-point pace transect conducted on SWAs identified to be transected. Information

recorded at each 100 points along the line includes basal hits of live vegetation, litter, small rock, large rock, and bare ground. Hits were identified by a notch on the toe of the sole of the boot, 1/8-inch wide and 1/16-inch deep. Canopy cover, if any, was recorded up to three levels (BLM Manual TR 4400-4).

Information on vegetation production was obtained from each transect. Ten weight estimate plots of 9.6 square feet were used to gather the production data. Three of the ten plots were clipped and weighed; the remainder were estimated.

The production data was gathered and recorded on the Range Condition Worksheet (Figure C-1) and used to determine ecological condition classes.

### Ecological Condition Class Methodology

Ecological condition describes current productivity of a range relative to what the range is usually capable of producing. It is expressed by means of four ecological condition classes: 1) excellent; 2) good; 3) fair; and 4) poor. The following shows the relationship between the ecological condition classes and the climax communities.

Ecological Condition Class	Percentage of Climax Plant In the Existing Plant Community
Excellent	76 - 100
Good	51 - 75
Fair	26 - 50
Poor	0 - 25

An example of the calculations for determining range condition for a loamy range site (Figure C-2) occurring in the Canadian Plains (CP-3) MLRA is illustrated in Figure C-1 and described below:

- a. Compare individual species composition, in percent, to percent ranges shown for the same species in the Potential Natural Plant Community section of the range site description (Figure C-2).



## RANGE CONDITION WORKSHEET

NAME \_\_\_\_\_ RANGE SITE Loamy G070C109N  
 PASTURE (NO. & NAME) \_\_\_\_\_ M.L.R.A. CP-3  
 TRANSECT LOCATION \_\_\_\_\_ DATE \_\_\_\_\_ BY \_\_\_\_\_

SPECIES	PRESENT PRODUCTION OCULAR EST. DOUBLE SAMPLED <u>XX</u> POUNDS PER ACRE _____ KILOGRAMS PER HECTARE _____		PRESENT	COMPOSITION	COUNTED IN CONDITION RATING
	ALLOWABLE 1/	PERCENT OF TOTAL PRODUCTION			
GRASSES	GREEN	DRY WEIGHT FACTOR	DRY		
Blue grama				28	20
Galleta				18	15
Sand dropseed				13	8
Ring muhly )				5	
Burrograss )				1	10
					6
SHRUBS, HALF-SHRUBS, VINES, & TREES					
Broom snakeweed				29	5
					5
FORBS					
Globe mallow				3	2
Woolly Indianwheat				1	2
					1
TOTAL					
RANGE TREND UP _____	DOWN	(see reverse) Range CONDITION (ECOLOGICAL)			57
PLANT COVER % _____	RANGE CONDITION CLASS <u>Good</u>				

1/ See Natural Potential Plant Community Section of Range Site Description. Not to exceed the upper limit of the approximate range in % composition for the individual species.

FIGURE C-2  
LOAMY RANGE SITE

# POTENTIAL NATURAL PLANT COMMUNITY

The potential plant community of this site is a mixed grassland of warm- and cool-season, mid- and short-perennial grasses. Woody species occupy a minor, but more important, part of this plant community. Forbs are a minor component of this site. However, during years of abundant spring and fall moisture, a large variety of forbs occur throughout this site.

## Composition of Potential Plant Community

Approximate percentage of total annual herbage production.

Grasses and Grasslike -	80-90%	(Shrubs, half-shrubs trees, and vines)		Forbs 5-10%
		Woody	5-10%	
western wheatgrass	15-20	fourwing saltbush)		drummond milkvetch )
blue grama	15-20	winterfat )	5-7	redstemmed milkvetch ) T-2
galleta	10-15	ephedra )		locoweed spp. T-2
bottlebrush squirreltail	5-7	pale wolfberry )		Wild buckwheat T-2
sideoats grama )		Apache-plume )	3-5	globemallow T-2
little bluestem )	10-15	broom snakeweed )		threadleaf groundsel T-2
vine-mesquite	5-10	rubber rabbitbrush )	3-5	other forbs T-2
black grama	5-7	other shrubs	1-5	
sand dropseed )				
spike dropseed )	5-8			
alkali sacaton	3-5			
threeawn spp.	2-5			
Halls panicum )				
switchgrass )	5-10			
plains lovegrass )				
other grasses )	5-10			

Other grasses that could appear on this site include wolftail, cane bluestem, silver bluestem, prairie junegrass, pinyon ricegrass, Indian ricegrass, New Mexico feathergrass, needle and thread, green needlegrass, mesa dropseed, spike muhly, Metcalfe muhly, curlyleaf muhly, buffalograss, burrograss, ring muhly, mat muhly, sandhill muhly, red muhly, Poa spp., and carex spp.

Other shrubs include skunkbush sumac, littleleaf sumac, sacahuista, yucca spp., bigelow sagebrush, fringed sagewort, cholla, pricklypear, pinyon, juniper, and algerita.

Other forbs include Rocky Mountain beeplant, marigold yarrow, ragweed, wooly Indian-wheat, whorled milkweed, tansymustard, fiddleneck, and Indian paintbrush.



b. Enter the upper limit of the range in percent given for the plant's potential under the "Composition Allowable" column.

c. Count the lesser of the "present composition" or "allowable composition" columns toward the ecological or numerical condition rating in the last column. (If a plant found in the present plant community is not listed in the potential plant community, put zero in the last two columns. It should not be counted in the range condition rating.)

d. The total of the last column is the ecological or numerical range condition rating (between 0 to 100) for that site in its present condition. This rating reflects conversely how much, if any, the present vegetation has departed from the site's potential; that is, a rating of 50 simply means that the present composition either in kind or amount of species, has departed as much as 50 percent from the potential. A rating of 40 means the departure is about 60 percent, and so on.

The rating of 57 indicates that the site is in a good ecological condition.

#### Apparent Trend Methodology

Apparent trend is an estimate of current trend based on indicators of current changes occurring in the vegetation and soil condition. These factors are: plant vigor, reproduction, composition changes, plant residue, and soil surface condition. A numerical rating is assigned for each factor and a composite rating is determined. A composite rating from 0 to 8 signifies a downward trend, 9 to 11 a static trend and 12 to 20 an upward trend. Figure C-3 illustrates the guide for determining apparent trend.

FIGURE C-3

#### GUIDE FOR DETERMINING TREND (NRHB) (Sec. 307 National Range Handbook)

	Rating	Example 1/
Long-Term indicators		
Plant Vigor	0-4	3
Reproduction	0-4	3
Composition changes	0-4	2
Plant residue	0-4	2
Soil surface condition	0-4	1
TOTAL	0-20	11

1/ Example displays a static trend rating

#### Trend Studies

Trend studies as part of the rangeland monitoring program have been established on all allotments in the Chupadera Mesa area. Such studies include the standard BLM 3- x 3- foot trend plots and 100 foot point transects and the more recently established point frequency quadrat method (BLM 1980). This method is considered to be more reliable than the other methods due to the increased sampling area and number of species monitored. These established studies will provide base information for determining long-term trend for the area. This information is available for review in range studies file for each respective allotment.

#### RANGELAND IMPROVEMENTS AND VEGETATIVE LAND TREATMENTS

Rangeland improvements and vegetative land treatments will be designed and constructed in accordance with laws, policy, and BLM manual instructions. These guidelines seek to protect or minimize impacts on resources while achieving maximum benefit and cost

effectiveness. Prior to the development of improvements, an environmental assessment (EA) will be prepared addressing localized impacts and alternatives. In addition, a benefit/cost (B/C) analysis will be completed to determine the most cost effective format for each rangeland improvement. The EA and B/C will assist in the planning and decision-making of the project. The following describes the general design of some rangeland improvements.

## RANGELAND IMPROVEMENTS

### Fences

Fences are to be constructed to aid the management of an allotment by providing pastures or traps and outside boundaries to control livestock. A number of fence designs are used by BLM and are described in BLM Manual Handbook H-1741. The more commonly used designs which meet multiple-use needs are shown below:

	Design Type <u>1</u>	Design Type <u>2</u>
No. of wires	4	3
Fence Height (inches)	42	38
Wire Spacing (From ground up, inches)	16,6,8,12	16,10,12
Wire Type	Barbed with bottom wire smooth	Barbed with bottom wire smooth
Post Spacing (ft.)	16.5	16.5

### Springs

Springs would be developed or redeveloped using a backhoe or other implement to install a buried collection system, usually consisting of a perforated pipe and collection box. A short pipeline would be installed to deliver water to a trough for livestock and wildlife. The spring is usually fenced for protection. Wildlife troughs are, at times, located within the fenced area.

### Pipelines

Pipelines are constructed of flexible or rigid plastic, but usually with polyethylene pipe.

The pipe is buried wherever possible by mechanical implements such as a backhoe, trencher, ripper tooth or similar equipment to a depth necessary for the maximum life and efficiency of the pipe material. Design also considers the placement of drinking troughs and water storage needs.

### Wells

Well locations would be selected based on well site investigations which would predict the depth to reliable aquifers. All applicable State laws and regulations that apply to groundwater would be observed, including water rights acquisition.

## VEGETATIVE LAND TREATMENTS

Vegetative land treatments refer to the methods used to control the growth and spread of undesirable vegetation or to increase the abundance of desirable vegetation. Control can be by chemical or mechanical means, by burning, or by manual means.

### Burning

Burning involves the use of fire under prescribed conditions. This technique takes into consideration factors, such as weather, intensity of burning, vegetation, and other factors necessary, to achieve desired objectives. Some reasons for burning include:

- Increase palatability of forage, removing old and dead growth;
- Increase forage production; and
- Kill or suppress undesirable plant species.

Burning is identified for use primarily on sacaton (*sporobolus airoides*) draws. Its purpose would be to remove the plants' coarse, old growth, thus increasing its palatability.

The cost of burning, as compared to other vegetative land treatments, is low. The cost is approximately five dollars per acre. Burn plans would be developed for each individual action.



## Chemical Treatments

Chemical treatments involve the use of ground or aerially applied herbicides to target species to reduce their competitive effect on more desirable species. The resultant effect would be an increase in grass and forb production.

Stage of plant growth and season of application are especially important in prescribing chemical (herbicide) treatments. Plant susceptibility to herbicides varies seasonally and widely throughout the RMP area. Information on the most effective timing of applications appears in published research and on herbicide labels.

Rates of herbicide application would depend on the target species, other vegetation present, soil type, depth of the ground water table, and presence of other water sources. The minimum amount of chemical to achieve the desired results would be used.

Many different herbicides exist and all vary in action, application, selectivity, and persistence. However, few are approved for use on the public lands. Within the SRA several herbicides are being considered for use on target species; i.e., mesquite, broom snakeweed, creosote, sand sage, and cholla. These compounds are usually selective for broadleaf vegetation and leave only grasses and tolerant shrub species after treatment. Information concerning these herbicides is shown in Table C-4. Herbicides have already been successfully applied in a number of areas on various target species in the SRA. A decrease in target species, i.e., creosotebush has been noted, along with the increase in grass and forb production. Treatment of approximately 7,000 acres of creosotebush is identified under the Nogal HMP in FY 88 to benefit wildlife habitat.

Herbicides are applied in several ways depending upon the treatment objective, topography of the treatment area, target species, expected costs, equipment limitations and potential environmental impacts.

Fixed-winged aircraft or helicopters would be used for all aerial applications, and nozzles

to reduce drift would be used for all liquid applications. Liquid herbicides would not be applied when wind speeds exceed 7 miles per hour (mph), and granular herbicides would not be applied when wind speeds exceed 10 mph. Herbicides would not be applied when conditions stated on the herbicide label cannot be met and when air turbulence significantly affects the desired spray pattern. Buffer zones (see Glossary) to protect water resources, threatened or endangered (T&E) habitat, riparian areas, etc., would be provided according to individual state regulations and guidelines and herbicide labels.

A hand gun would be used for spot treatment of weeds and would be applied in a manner that gives the best possible coverage with the least amount of drift, and only when wind velocity is below 8 mph.

Hand applications could involve backpack spraying, handgun (spot gun) applicator, wiper application, and cyclone broadcast spreading (granular formulations).

In addition, new chemicals currently being evaluated by the U.S. Environmental Protection Agency (EPA) would be considered for possible use, if and when they are approved. Before these chemicals are used, a site-specific EA would be prepared to determine impacts. Directions for use and precautions during use would follow those set by the manufacturer of the herbicide. Herbicides would be applied and monitored in accordance with BLM manual 9222, chemical control.

## Mechanical Treatment

Mechanical treatments involve the use of various types of mechanized equipment or implements to achieve desired results. Some implements are used to remove or destroy brush species, while others are used for the purpose of seed bed preparation, seeding and breaking, and aerating a compact soil. The techniques and implements are highly variable, but all share the disadvantage of high cost. Some of the treatments that may be considered follow.

TABLE C-3  
SELECTED MAPPING UNITS AND ASSIGNED RANGE SITES

Mapping Unit	Percent	Soil Series	Percent Slope	Range Site	
				Number	Name
709	40	Penistaja	1- 8	070C109N	Loamy
	35	Clovis	1- 8	070C109N	Loamy
716	35	Cree1	1- 9	070C109N	Loamy
	30	Musofare	2-15	070C119N	Gravelly
	15	Clovis	5-10	070C109N	Loamy
737	40	Harvey	1- 9	070C108N	Limy
	35	La Fonda	1- 9	070C109N	Loamy

TABLE C-4  
HERBICIDES PROPOSED FOR USE

Herbicide	Formulation	Rate	Application Method	Plant Physiological Effects	Target Species
Hexazinone	liquid	2-4 ml per 1 in. of stem dia., breast height	Spotgun Applicator	Absorbed through roots, inhibits photosynthesis	Mesquite
Tebuthiuron	pellets-20 P	.3 - 1 lb. a.l./ac.	Aerially broadcast	Absorbed through roots, inhibits photosynthesis	Broom snakeweed creosotebush sand sage
Picloram	liquid	.5 lb. - a.e./ac.	Aerially sprayed,	Absorbed by foliage and spot application	Broom snakeweed cholla by roots, interferes with hormone systems



## Pitting and Ripping

This treatment is intended to loosen compacted soils and increase water infiltration to improve vegetation vigor and to allow other forage species to become established. Pitting and ripping initially damage the vegetation, but production is soon increased. On medium and fine textured soils, furrows lasted up to 24 years and increased forage production by 160 percent (Brauson et al. 1966). In the southwest deserts, combinations of pitting and seeding have aided seedling establishment where resident cover has been relatively sparse (Barnes et al. 1958).

## Discing/Harrowing and Seeding

This treatment would be used on deteriorated sites with little remaining vegetation or in conjunction with proposed treatments. Most of the existing vegetation would be damaged during seed bed preparation, and the site would be seeded with species adapted to the site. Sites may be seeded using a drill or by broadcasting. Seed would be drilled wherever possible.

## Interseeding

This treatment differs from discing and seeding in that existing vegetation is not eliminated during seed bed preparation. The implement makes a furrow which removes the competitive plant species and then drops the seed in the center of the furrow.

Interseeding may be advantageous over complete seed bed preparation where 1) erosion hazard is high, 2) the preparation of a complete seed bed is impractical or 3) the purpose is to modify rather than replace the present plant stand (Valentine 1971).

## Manual Methods

Manual methods of controlling undesirable plants is slow, adapted to small areas, labor intensive, and very costly unless limited to sparse stands. However, this method can be used to clear scattered stands involving rangelands or as follow-up maintenance.

Grubbing involves digging out plants with as much of their root system to prevent sprouting and regrowth. Simple hand tools such as a grubbing hoe or mattock may be used to chop off the herbaceous plants near the ground level or grub out roots. Axes can be used on any size brush to cut top growth. In Arizona hand grubbing using mattocks was shown to be the most inexpensive and most effective method of removing small mesquite trees (under 1 inch in diameter) in scattered stands. Mesquite may be grubbed out by taking the root at 4 inches below ground to remove the sprouting zone. Grubbing can be selective and done at any time with little damage to desirable species.

## STANDARD OPERATING PROCEDURES

The operating procedures listed in this appendix will be standard for all rangeland improvements and vegetative land treatments.

1. Consultation with the affected interest groups and an approved EA to determine environmental impacts will be required for all rangeland improvements and vegetative land treatments before the project is initiated.
2. Roads or trails would be constructed only where existing roads and trails could not be used.
3. BLM would conduct cultural resource management inventories on areas where surface disturbance would occur during project implementation. All cultural resources would be avoided or mitigated. In accordance with the Programmatic Memorandum of Agreement (PMOA), dated January 14, 1980, BLM would consult with the State Historic Preservation Officer (SHPO) and the Advisory Council on Historic Preservation (ACHP) on activities causing surface disturbance, which may impact the cultural resource.

If undiscovered cultural remains are encountered during construction, the operator would halt disturbance until BLM evaluates the discovery and determines the appropriate action.

4. No action would be taken by BLM that could jeopardize the continued existence of any Federally listed T&E plant or animal species. Formal consultation between the U.S. Fish and Wildlife Service (FWS) would be required before any part of the proposal or alternatives would be implemented that could affect an endangered species or its habitat. The results of the consultation would determine the course of action necessary to avoid adverse effects on listed species. All procedures are described in BLM Manual, Section 6840.

The BLM also would comply with any State laws applying to animal and plant species identified by the State of New Mexico as being threatened or endangered (in addition to the Federally listed species).

5. All wilderness values would be protected on designated wilderness areas or on lands under wilderness review or study. The Interim Management Policy and Guidelines (USDI, BLM 1983) would be followed in all Wilderness Study Areas. Should any of these areas be designated as wilderness areas, then the Wilderness Management Policy (USDI BLM 1981) would be followed. No impairing projects would be allowed in these areas.

6. All actions would consider the BLM's Visual Resource Management Criteria.

7. Wildlife escape devices would be required in all water troughs and open storage tanks.

8. In crucial wildlife habitat (e.g., winter ranges, fawning areas, nesting areas) construction work on projects would be scheduled at an appropriate time to avoid or minimize disturbances.

9. After construction, disturbed areas would be revegetated with a mixture of grasses, forbs, and shrubs as specified by the mitigating measures of the EA.

10. Analysis of cost effectiveness would be done on an AMP basis prior to the installation of any structural or non-structural improvements.

11. Vegetative land treatment projects would be done in irregular patterns, creating more edge than strip and block manipulation, with islands of vegetation left for cover.

12. Consultation with the New Mexico Department of Game and Fish (NMDG&F) would be required prior to job survey, design, and accomplishment in accordance with the existing Memorandum of Understanding between the NMDG&F and the BLM.

13. Chemical treatment would consist of applying chemicals which have been approved by the EPA, to control brush/plant species such as mesquite, broom snakeweed, cholla, sagebrush, and creosotebush. Before chemicals are applied, the BLM will comply with Department of the Interior regulations.

All applications of pesticides would be under the supervision of a certified pesticide specialist. All applications would be carried out in compliance with New Mexico pesticide laws. Coordinated planning will be a major consideration when developing brush control programs where private, State or other Federal land is involved.

14. All areas where vegetative land treatments occur would be totally rested from grazing for at least two grazing seasons following treatment.

15. The following are minimum widths (measured horizontally) for unsprayed buffer strips for foliar herbicides applied adjacent to river, any ranch houses or known locations of threatened or endangered plants. Open metal storage and drinking tubs can be covered with plastic sheeting.

a. Aerial Spraying Foliar	
Spraying altitude (over-ground) 5 - 20 feet	Buffer Strip 1,500 feet
b. Aerial Application (pellets)	
Altitude 50 to 100 feet	100 feet
c. Vehicle Spraying	300 feet
d. Hand Application	100 feet



# AVERAGE ECOLOGICAL RANGE CONDITION METHODOLOGY

To assess range condition, the SRA considered range condition classes as a range of values occurring between 0 and 100; with 0-25 as poor, 26-50 as fair, 51-75 good, and 76-100 excellent. The area arbitrarily took the midpoint of each ecological range condition class (poor - 12.5; fair - 37.5; good - 62.5; excellent - 87.5) and multiplied it times the number of allotment acres (public land) found in the respective ecological range condition class. All ecological range condition data was obtained using a modified Soil-Vegetation Inventory Method (SVIM) during the inventories of 1985 (BLM Socorro Resource Area Planning/EIS files). The methodology was based on the ecological range condition [Soil Conservation Service (SCS) Range Site] technique. The values were summed and then

divided by the total public land condition acres (non-range site acres were not included) to yield the average allotment condition.

An example of this computation is:

## Allotment A

Poor 212  
X 12.5  
2,650.0

Fair 3,219  
X 37.5  
120,712.5

Good 3,722  
X 62.5  
232,625.0

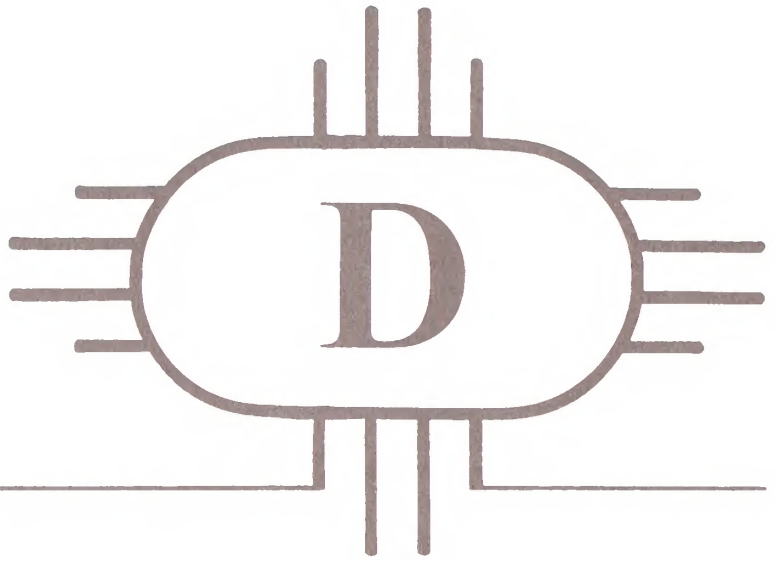
Excellent 516  
X 87.5  
45,150.0

Total Acres 401,137/7,669

401,137.5/7,669 = 52.31 allotment average  
condition (good).







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No Grazing Alternative

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## NO-GRAZING ALTERNATIVE

### INTRODUCTION

No grazing was originally considered as an alternative. However, "No Grazing" on the public land was determined not to be feasible, practical or implementable; therefore, it was dropped from consideration. Nevertheless, the impacts of this alternative are analyzed below. This alternative would provide for improved ecological condition, enhanced wildlife habitat, and improved protection of watershed resources through elimination of livestock grazing use on approximately 121,270 acres of public land in the vegetative uses issue area.

To implement this alternative, all public lands in the issue area would need to be fenced to exclude the livestock which would continue to graze on the adjoining private and State lands formerly contained within the allotments. This would require the construction of approximately 250 miles of fence at an estimated cost of approximately \$750,000. The cost of fencing these lands would make the implementation of this alternative unrealistic and unfeasible.

Although "No Grazing" is an unrealistic alternative to be implemented over the entire issue area, it is viable when considered on small areas such as exclosures, or a pasture(s), when livestock must be removed to protect or improve the vegetation resource or other resources [i.e., blow out areas, threatened or endangered (T&E) species]. The exclusion of livestock grazing has been proposed within the following special management areas (SMAs): 1) Teypama, 17 acres; 2) Playa Pueblos, 40 acres; and 3) Mogollon Pueblo, 12 acres.

### ENVIRONMENTAL CONSEQUENCES

There would be no impacts to the following resources as a result of implementation of the No Grazing Alternative: energy and minerals, geological and paleontological resources, air quality, and woodland resources, cultural resources, and lands.

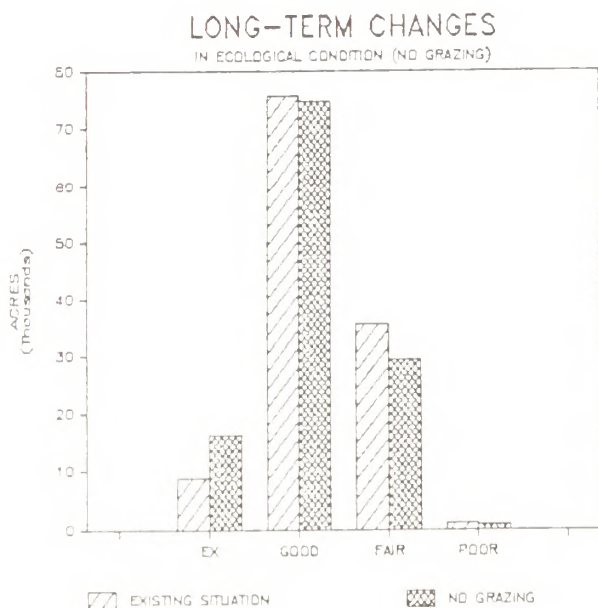
## Livestock Grazing

Under this alternative, a reduction of 28,008 AUMs would be proposed for 12 allotments. These reductions would be implemented in accordance with 43 CFR 4110.4-2(b) which states that "the permittees and lessees shall be given two years prior notification except in cases of emergency before their grazing permit or grazing lease and grazing preference may be cancelled."

With no grazing permits or licenses being issued, all allotment management plans (AMPs) would be cancelled. New rangeland improvements would not be constructed and existing rangeland improvements would either be removed, abandoned, or maintained for wildlife. Many livestock operators would have to reduce their livestock numbers and obtain other grazing lands or purchase supplemental feed to remain in the livestock business. Others would have to liquidate or disperse their lands or livestock herds.

In the short term, vigor of preferred livestock forage would improve on all allotments. In the long term, improved ecological condition would occur on all allotments. Figure D-1 summarizes the estimated improvements in ecological condition (excellent, good, fair, and poor).

FIGURE D-1



### Soils and Water

Under this alternative watershed conditions would improve commensurate with vegetative conditions except where gully systems are active. Fencing and no grazing would not improve public lands situated downslope from lands in poor vegetative condition. In these situations, public lands would continue to deteriorate from the impacts of off-site erosion processes and products. Overall the benefits of this alternative would be minimal in relation to watershed problems and priorities in the SRA.

### Wildlife Habitat

It is assumed that habitat for wildlife would generally be improved if grazing were eliminated on the 121,270-acre vegetative uses issue area. Competition for forage between big game and livestock would be eliminated on 12 allotments. Cover for small animals would increase throughout the vegetative uses issue area.

Domestic livestock grazing may have beneficial impacts to wildlife habitat by increasing habitat diversity, increasing production of certain forage, or opening areas for easier access by wildlife.

Therefore, it is likely that habitat changes would be detrimental to some species. None of these consequences would be long term or irreversible since grazing could be reinstated.

### Threatened, Endangered, and Rare Species

If livestock were removed from the public lands in the issue area, State-listed species (see MSA) would benefit. Mortality to rare plants by livestock would be eliminated.

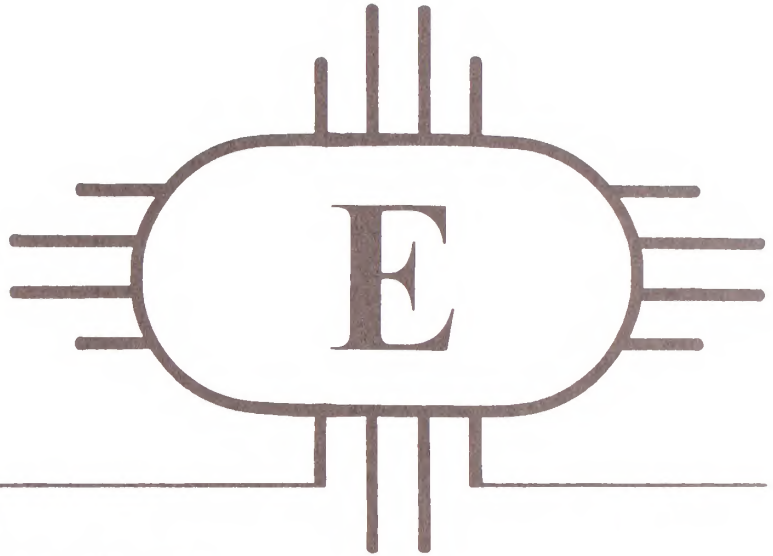
### Recreation

Those recreation opportunities which are strongly linked with visual resources would be enhanced through implementation of the No Grazing Alternative. Those opportunities clustered around the more primitive end of the spectrum (see Appendix I) would particularly benefit since less evidence of man's impact is desirable in such recreation setting.

### Visual Resources

In general, the visual resources of the vegetative uses issue area would be enhanced by implementation of the No Grazing Alternative. Greater amounts of vegetative cover as well as increases in specific species would be beneficial in the long run. Shifts in color and texture could be dramatic, with some change in form and line also occurring.





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Lands and Minerals Disposal Policy

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## LANDS AND MINERALS DISPOSAL POLICY

### Surface Estate Disposal Policy

All surface estate disposal actions require the preparation of a mineral report to assess the mineral potential of the property prior to disposal.

Any potential interference with mineral development will be considered through the disposal process. The creation of a split surface-mineral estate causing surface interference with Federal mineral development will be avoided to the extent possible. Any surface disposal action within the Rio Grande Valley area will closely analyze potential impacts to Federal mineral material development. In addition, all surface estate patents within areas of known coal potential will carry a reservation of surface owner consent rights under the Surface Mining Control and Reclamations Act of 1977.

The following procedures will be followed for the various types of surface estate land disposal actions in the Socorro Resource Area (SRA).

#### Exchanges

Disposal by exchange must meet the criteria outlined in the Federal Land Policy and Management Act (FLPMA) Sec. 206, whereby it is determined that the public interest will be well served by making the proposed exchange. Exchanges within retention zones may be possible if it is clearly determined that it is in the best interest of the public. The following principles will guide the SRA in its land exchange program.

1. The SRA will continue to strive to process mutually benefitting, public interest, land exchanges in a timely and efficient manner.

2. Acquisition, through exchange rather than purchase, of lands or interests in lands required for resource management programs, will always be the preferred method of

acquisition as this will reduce the expansion of Federal real estate holdings and help to assure the integrity of State and local tax bases.

3. Comments from the State, local governments, and the general public shall be sought and considered before completion of each exchange.

4. Patent and deed reservations and conditions will be kept to the absolute minimum necessary to complete the transaction. Rights of third parties holding rights-of-way and other legal interests in the exchanged lands will be protected.

5. The generally preferred rule is for both surface and subsurface (mineral) estates to be traded in an exchange. However, due to third party encumbrances, or difficulties in the valuation process, it may be preferable to complete certain exchanges with reservations. Such exceptions to the generally preferred rule are to be made on a case-by-case basis.

6. Exchanges shall be utilized to consolidate or unite the surface and subsurface estates for both the Federal Government and non-Federal owners in split or mixed-estate situations.

7. Exchanges may be utilized to effect ownership and management area boundary changes or adjustments and to form more logical and efficient land and resource management areas for both the BLM and non-Federal owners.

8. Whenever the law permits, expenses incurred by BLM on exchange actions for the benefit of other Federal agencies shall be recovered from such benefitting agency. The BLM shall not attempt to recover nominal costs.

9. When an exchange involves the cancellation of a grazing permit or lease, the compensation for rangeland improvements and 2-year notification requirements of Section 402(g) of FLPMA and 43 Code of Federal Regulations (CFR) 4110 will be met.

10. The acquisition of nonpublic lands containing unique or unusual historic, cultural, mineral, recreational, scientific, scenic or wildlife habitat values will be pursued when formulating any exchange proposal.

#### Sales

Property selected for sale must be identified as being potentially suitable for disposal in an approved land-use plan and must meet one or more of the criteria outlined in FLPMA Sec. 203. In addition, if the tract is 2,500 acres or more, procedures outlined in Sec. 203(c) must also be followed. The disposal criteria is as follows:

- o Such tract because of its location or other characteristics is difficult and uneconomic to manage as part of the public lands, and is not suitable for management by another Federal department or agency; or
- o Such tract was acquired for a specific purpose, and the tract is no longer needed for that or any other Federal purpose; or
- o Disposal of such tract will serve important public objectives, including but not limited to expansion of communities and economic development, which cannot be achieved prudently or feasibly on land other than public land and which outweighs other public objectives and values, including but not limited to recreation and scenic values, which would be served by maintaining such tract in Federal ownership.

Conformity with one or more of these criteria must be determined during the preparation of a land report which is prepared simultaneously with an environmental assessment (EA). Anticipated environmental impacts to existing resources such as minerals, wildlife, recreation, range, cultural resources, wilderness values, floodplains, paleontological values, visual resources, areas of critical environmental concern (ACEC), wetlands, threatened or endangered

(T&E) species and habitats, wild and scenic rivers, prime or unique farmlands, and social and economic conditions, will be considered during the preparation of each EA. The EA and land report will be used together to determine whether or not the subject parcel is truly suitable to be offered for sale. Once this determination has been made, a fair market appraisal of the property will be completed to set the minimum acceptable bid.

Also, assessed during the preparation of the land report is a determination as to what method of sale will be used if the tract is in fact deemed suitable for sale. Several factors are considered in determining the method of sale which include, but are not limited to: the needs of State and/or local governments, adjoining landowners' interests and concerns, public policies, historical uses, and equitable distribution of the land. The SRA policy for determining the sale method is as follows:

1. Competitive Bidding is the preferred method of sale and will be used where clearly there would be a number of interested parties bidding for the land and they could make practicable use of the land regardless of adjoining landownership. Competitive bidding will also be used where the land is clearly within a developing or urbanizing area and land values are increasing due to their location and interest on the competitive market. If there are no overriding bases for modifying competition or direct sale, the land will be offered through competitive bidding. Normal practice for competitive sales is to first offer the land for sale by sealed bid; if unsold, offer for sale over-the-counter.

2. Modified Competitive Bidding may be used to permit the existing grazing user or adjoining landowner to meet the high bid or to limit the number of persons permitted to bid on the land. These sales would normally be for lands not located near urban expansion areas or with rapidly increasing land values, when there is a need to avoid jeopardizing existing use of adjacent land, to assure compatibility of the possible uses with adjacent lands, and avoid dislocation of



existing users. This procedure will allow for limited competitive bidding to protect ongoing use.

3. Direct (without competition) Sales may be used when, in the opinion of the authorized officer, the public interest would best be served. Examples include but are not limited to:

- o A tract identified for transfer to State or local governments or nonprofit organizations; or
- o A tract identified for sale that is an integral part of a project of public importance and speculative bidding would jeopardize the timely completion and economic viability of the project; or
- o There is a need to recognize authorized use such as an existing business which would be threatened if the tract were purchased by other than the authorized user; or
- o A tract is surrounded by land in non-Federal ownership and does not have public access; or
- o The lands support inadvertent unauthorized use or occupancy.

4. When lands have been offered for sale under direct or modified bidding procedures and they remain unsold, then the land will be re-offered by the competitive bidding procedure. In no case will the land be sold for less than fair market value.

Public participation and intergovernmental coordination will be sought and encouraged during the development of each sale schedule. Where a decision is made to dispose of land within a grazing allotment, permittees and lessees will be given a 2-year notice of the planned disposal in accordance with 43 CFR 4110.4-2. If the 2-year notification period is not waived, the parcel may not be offered for sale until the end of the notification period. Grazing permittees/lessees will receive fair market value (less salvage value)

for their interest in authorized permanent rangeland improvements located on public lands in accordance with 43 CFR 4120.6-6. If floodplain tracts are designated for disposal, the patent will contain language indemnifying the United States against any claims for loss or injury due to flooding.

#### Recreation and Public Purposes (R&PP) Patents

The SRA will continue to issue patents to qualified governmental and nonprofit entities for public parks and recreational sites under the Recreation and Public Purposes (R&PP) Act throughout the life of the RMP. These patents may be issued at less than fair market value as outlined in 43 CFR 2740. Applications for patent of public lands under the R&PP Act will be processed as an SRA priority under the requirements of the National Environmental Policy Act (NEPA) and will always be subject to public review. No sanitary landfill sites will be patented in the SRA pursuant to the R&PP Act. R&PP applications may be entertained, in either retention or disposal zones; yet, a determination must always be made that the disposal action is in the public's best interest.

#### Mineral Estate Disposal Policy

Disposal of the mineral estate is possible under Sections 206 and 209 of FLPMA. It is the policy of the BLM to avoid disposing of the surface estate while retaining the mineral estate unless there are areas of "known mineral value", as defined in 43 CFR 2720.0-5. In areas of "known mineral value", the mineral estate (and the surface estate if substantial interference to development would result) should be retained except as described below.

Prior to any land disposal a "mineral value" determination must be made following a field reconnaissance by a BLM mineral examiner. A mineral report must be written to evaluate the leasable, locatable, and saleable mineral potential of each proposed sale or exchange. Under FLPMA, the conclusion of the mineral examiner will include an opinion as to whether the lands have "known mineral values". If

professional judgment concludes that the land does not contain "known mineral values," the surface and subsurface estate may be conveyed, subject to any existing mining claim(s) or mineral leases.

A mining claim of record under Section 314 of FLPMA generally prevents an exchange or sale. If the land is under mining claim, the surface should be retained under Federal ownership or the claim examined for validity. However, a validity examination may be waived and the BLM may proceed with the sale or exchange of both the surface and the mineral estate, subject to the existing mining claim(s) if:

- o The land meets the criteria for disposal as determined through land-use planning, and
- o The land has no "known mineral value" as determined by a BLM geologist or mining engineer, and
- o The prospective patentee is willing to accept defeasible title, preserving whatever rights the mining claimant may have. Conveyance of the surface and mineral estate would be subject to "existing mining claim(s)," allowing the mining claimant to apply for and receive full fee patent if a valid discovery were made prior to the date of transfer under Sections 206 or 209, or alternatively, receive patent to the mineral estate only if discovery were made after the original conveyance.

The BLM will proceed with a sale or exchange only after reasonable efforts have been made to secure relinquishment of the mining claim(s). If the mining claimant opposes the action, the Notice of Realty Action (NORA) protest procedures would apply.

For a direct sale or an exchange, the proponent must be informed early and fully of the potential title conflicts and rights of the mining claimant under the law. The BLM should then proceed only if these conditions are acceptable to the proponent. For a proposed competitive sale, the field office

must carefully consider the effect on sale price, likelihood of success, and interests to be served if the sale is made subject to the rights of the mining claimant. If it is clearly in the public interest to proceed, the BLM must secure purchaser waiver of any liability against the United States in the event of subsequent title litigation.

In cases where lands are patented without a reservation of locatable minerals, a FLPMA patentee is believed to have standing to bring private contest (43 CFR 4.450) against the mining claim(s). Should he or she do so, the burden is upon the patentee to prove lack of discovery. If the patentee is successful, or if the claims are abandoned or relinquished, the land would not be open to further location, and the patentee would receive full title to the involved locatable minerals.

Mining claim locations and mineral leases for lands in which the surface title has passed under FLPMA disposal authority may be made only after regulations providing for such locations or leasing have been promulgated. Because these regulations have not as yet been issued, lands disposed of under FLPMA are subject to de facto withdrawal. Lands disposed of under FLPMA are not withdrawn from mineral material sales or free-use permits.

All minerals must be reserved if the Federal lands are conveyed out of Federal ownership pursuant to FLPMA disposal authority, except in the limited instances that follow:

#### 1. Sales

a. If the public lands proposed for sale are determined to have "known mineral values" for locatable, leasable, or saleable minerals, one of the following courses of action may be taken:

(1) Reject the offer to purchase or cancel the offer of sale.

(2) Dispose of the surface estate and reserve all of the mineral interests to the United States.



(3) Dispose of the surface and convey all or part of the mineral interests under terms set forth in Section 209(b) of FLPMA.

b. If the lands have no "known mineral values," the mineral interests may be simultaneously disposed of with the surface estate under authority of Section 209(b) of FLPMA.

## 2. Exchanges

a. Public lands which do not have "known mineral values" may be offered in exchange without any mineral reservation. This will apply whether or not the non-Federal party in an exchange controls the minerals under his or her land.

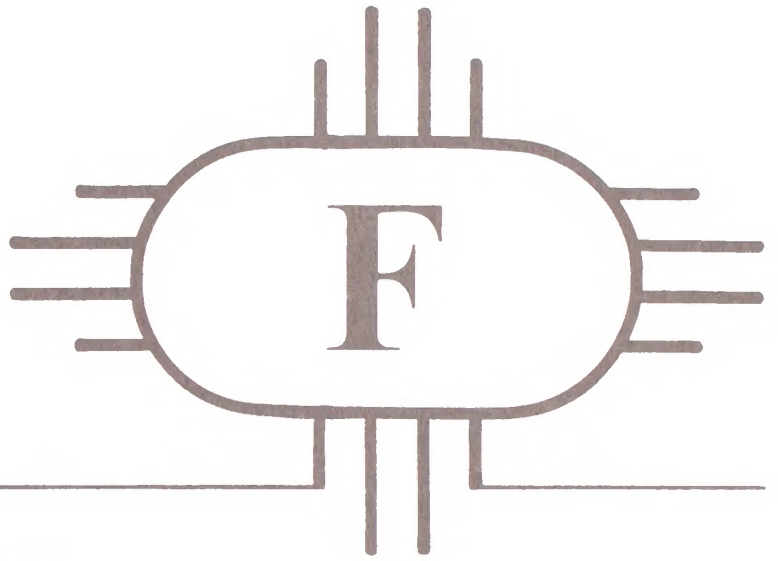
b. If the public lands have some potential for mineral development, reserving the mineral interests is not mandatory as long as the values can be equalized by the payment of money and so long as the payment does not exceed 25 percent of the total value of the land.

In any case, normally it is desirable to keep surface and mineral ownership together in an exchange, whenever possible, to eliminate future problems associated with split estate ownership.

c. If the public lands in an exchange are determined to have "known mineral values" for locatable, leasable, or saleable minerals, it may be in the public interest to cancel the offer, depending upon the significance of the deposits. The leasable minerals alone can be reserved if significant.







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Access Analysis Methodology

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## ACCESS ANALYSIS METHODOLOGY

The intent of the RMP access evaluation procedure was to simplify inventory tasks, to accurately identify problems considering motorized/non-motorized access needs, and to establish achievable objectives whereby access concerns can be resolved according to their relative importance. Access plans developed in the implementation phase will be in accordance with objectives described in this Appendix.

Inventory of physical and legal access routes consisted of the collection of existing information compiled within the Socorro County Transportation Plan of 1981, and the Catron County Transportation Plan of 1982. These plans, prepared by the BLM upon the close coordination with Federal, State, and County road departments, identified the legal public road systems as well as other known physical transportation routes. Sources used for the collection of this data included BLM 1/2-inch to the mile color quad maps, as well as USGS topographic maps. Intensive field inventories were completed to verify the existence of these transportation systems. Once the legal status of these access routes were determined, they were graphically portrayed on the RMP "legal access" overlay (see Map 2-4).

The RMP's interdisciplinary team of resource specialists, who represented the interests of cultural resources, range, wildlife, lands, minerals, forestry, recreation, and watershed, then divided the SRA into nine geographic regions whereby access needs and concerns could be more closely scrutinized. These nine geographic areas or access tracts (ATs) were then superimposed onto the legal access overlay and were then identified alphabetically, A-I. The internal boundaries of these ATs were delineated based upon various physical and political features such as county boundaries, Federal, State and County highways, National Forests, Indian Reservations, and private land grants. Once these AT boundaries were identified and analyzed, along with the existing legal access routes, the interdisciplinary team of resource specialists could then make evaluations as to whether or not access to the public lands

needed improvement or was adequate to accommodate existing and potential uses.

In accordance with the various themes of each of the four alternatives the ATs were then prioritized for the eventual development of detailed access activity planning. Some of the factors used for this prioritization, in addition to the legal access route overlay, included:

1. Configuration (AT size, shape, and amount of public land);
2. Resource values (quantity and quality);
3. Public demand and BLM administrative needs;
4. Proximity to population centers;
5. Proximity to major travel routes;
6. Potential for access closures;
7. Potential for public land disposal and/or acquisition;
8. Resource conflicts (caused by accessibility);
9. Presence of proposed special management areas.

Detailed access activity plans will be developed and will specifically identify certain easement needs and target acquisition dates. These access activity plans will be implemented upon a priority basis for each AT depending upon the alternative ultimately selected. Access activity plans will be prepared, in close coordination with SMA activity plans, to ensure that common goals are achieved.

Access activity planning will first concentrate its efforts toward a determination as to whether the existing legal access is sufficient, insufficient, excessive, or in some cases a mix of the three. In all analyses, the distinction between legal access and physical access will be addressed. Legal access acquisition will always be pursued over existing physical access routes before new road construction is considered as long as the existing physical access route serves the intended purposes. All ATs will be monitored throughout the life of the RMP to ensure that: 1) changing demands on the public land and its resources do not necessitate changes in the

ATs existing access systems, and 2) that existing access systems receive proper maintenance in accordance with BLM standards.

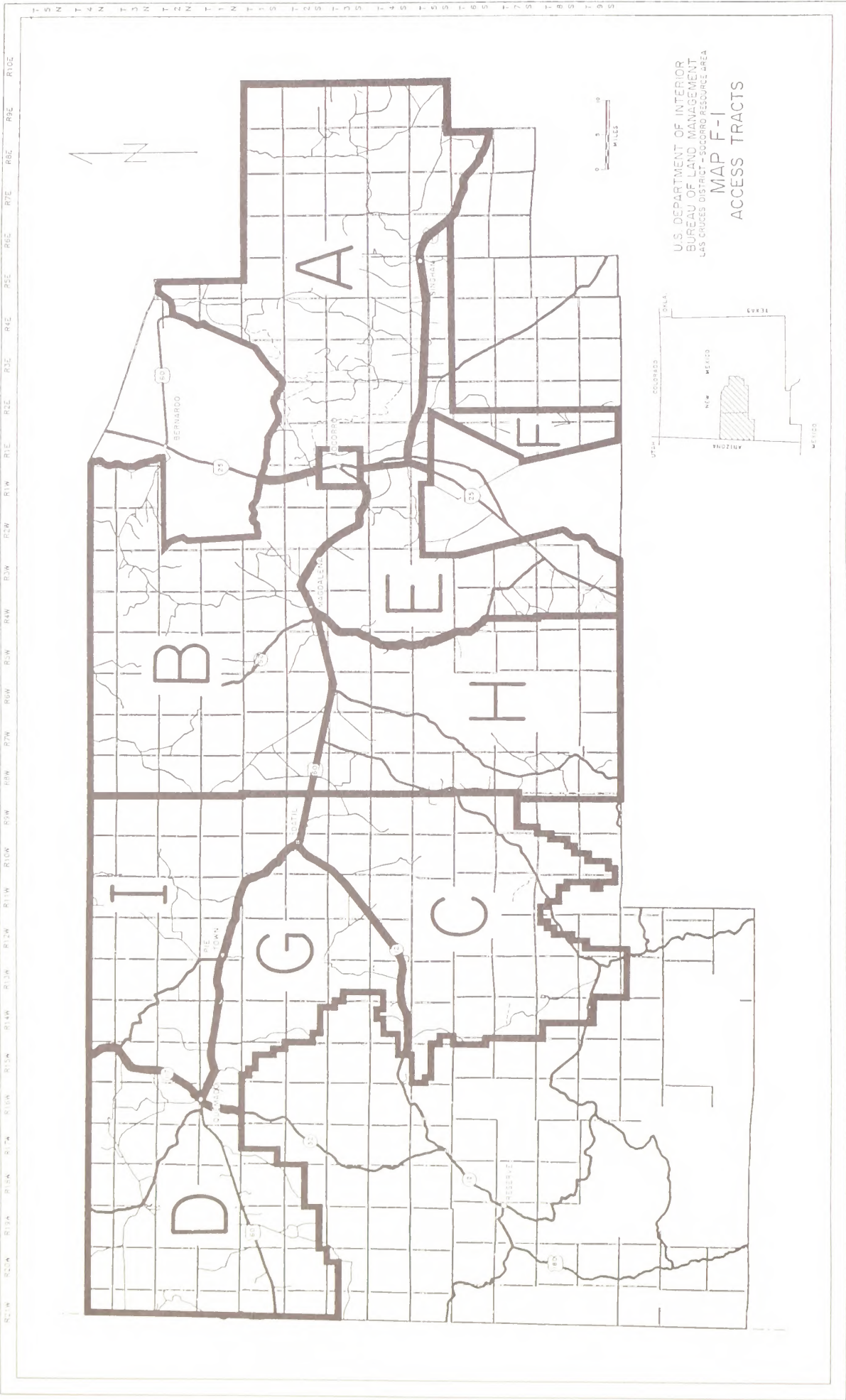
ATs that are determined to possess sufficient access systems will receive little attention other than those monitoring activities mentioned above. In ATs where access is excessive, road closures with proper rehabilitation will be considered based upon the resource values present within the AT. All road closure proposals will be aired for public comment prior to any closure action.

Where it is determined that existing access routes are insufficient and do not meet the

needs of a particular resource program or combination of programs, the SRA will pursue the acquisition of legal access. Factors or criteria to guide the SRA toward these acquisitions include, but are not limited to:

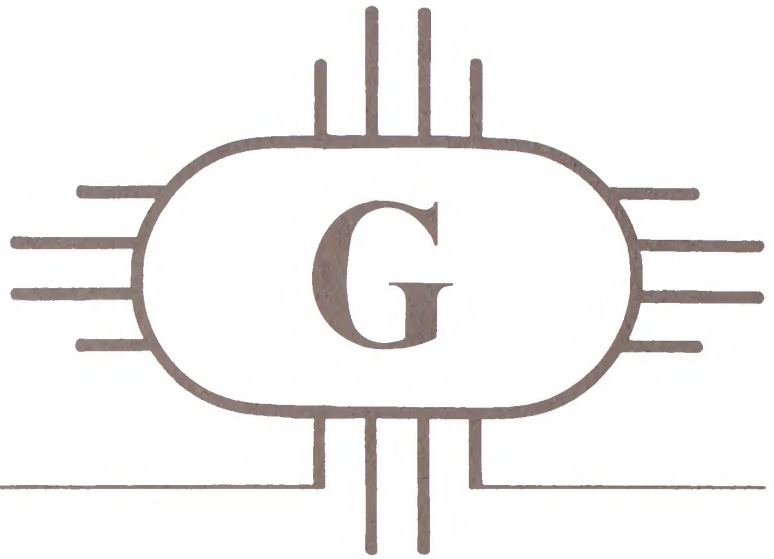
1. Private landowner's interests and/or concerns.
2. Number of private landowners affected.
3. Varying lengths of desired access routes.
4. Private property values.
5. Number of potential route users.
6. Season or seasons of potential use.
7. Road engineering design criteria.
8. Resource values enhanced versus resource values lost.











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Soils

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TABLE G-1  
MAJOR SOILS OF THE SOCORRO RESOURCE AREA

Soil Type	Major Soil Series	Approximate Percent of Survey Area
<u>SOCORRO COUNTY *</u>		
Deep nearly level, well-drained soils that formed in alluvia, on floodplains and stream terraces. This is a common soil type within the Rio Grande floodplain. These soils are suited for irrigation.	Glendale Agua Harkey	2
Shallow to deep undulating to moderate rolling, well-drained soils that formed in gravelly and very gravelly alluvia; on fans, terraces, ridges, and piedmonts. These soils are primarily found along the mountain foot slopes, both east and west of the Rio Grande.	Nickel Pinaleno Sedillo Millett Ildefonso	23
Deep nearly level to undulating, well drained to somewhat excessively drained soils, that formed in alluvia modified by wind, and eolian material; on fans and plains. These soils are common in mesquite sand dune areas, in the Jornada basin, and some areas along the east side of the Rio Grande below the ridges.	Pajarito Wink Bluepoint Palma	15
Rock outcrop shallow to deep, moderately rolling to extremely steep, well-drained soils that formed from alluvia and colluvia derived from limestone and gypsum; on steep hills, ridges, and swales. These soils occur in the Ladron and Chupadera Mesa areas.	Cuate Puice Tanbark	13
Rocky outcrop and shallow to deep moderately rolling to extremely steep well-drained soils that formed in eolian material and weathered basalt; on lava flows upland ridges, and mesas. The soils are common to the Jornada and Carrizozo lava flows and Mesa Redonda.	Akela Rock Outcrop Aftaden Cabezon Thunderbird	7

TABLE G-1 (continued)  
MAJOR SOILS OF THE SOCORRO RESOURCE AREA

Soil Type	Major Soil Series	Approximate Percent of Survey Area
Rock outcrop shallow to deep, moderately rolling to steep well-drained soils that formed in alluvia and colluvia derived from volcanic tuff, on volcanic mountains and ridges and mesas. These soils are common to the Chupadera Mountains east of Socorro.	Puertecito Motoqua Rock Outcrop Cascajo Laborcita	12
Shallow to deep, undulating to steep hills, well-drained soils that formed in material mainly derived from gypsum; on knolls, hills and fan terraces. These soils are common to an area north and east of Bingham.	Tanbark Netoma Yesum Holloman	9
Shallow to deep near level to undulating, well-drained soils that formed mixed alluvia and eolian materials; on fan terraces, plains, and swales; these soils are common north of Bingham, and the La Jencia basin and Chupadera Mesa area.	Harvey Penistaja Tanbark La Fonda	16
Deep nearly level, well-drained soils that formed in mixed alluvia; on plains swales and drainages. These soils are found in the Jornada and the Chupadera Mesa area.	Barana Glenberg Manzano Buckelbar	3
TOTAL		100
CATRON COUNTY		
Deep nearly level well-drained soils, level to sloping soils that formed in alluvia; in swales, drainageways and playas. These soils are common in the Largo Creek to the Arizona line and on the south end of the San Augustine Plains.	Catman Manzano Hickman	8



TABLE G-1 (continued)  
MAJOR SOILS OF THE SOCORRO RESOURCE AREA

Soil Type	Major Soil Series	Approximate Percent of Survey Area
Rock outcrops and shallow to deep, well-drained sloping to steep soils formed in eolian material and residuum from basalt or volcanic tuff, mainly on mesas, hills, and alluvial fans. These soils are common to Cow Springs Draw and Tejana Mesa.	Cabezon Datil Hubbell	7
Shallow to deep, well-drained sloping to steep soils that formed in alluvia and residua from weathered shale and basalt; on plains, hills, and alluvial fans. These soils are common to the Eagle Peak and Omega areas	Celacy Datil Hubbell	18
Shallow to deep well-drained, level to steep soils formed in alluvia and colluvia derived from sediments and volcanic materials; on alluvial fans, hills, and ridges. These soils are common in the Pie Town and Quemado areas.	Flugle Loarc Typic Ustorthents	21
Shallow to deep, well-drained, sloping to steep soils formed in alluvia and residua derived from volcanic tuff and lava; on alluvial fans, hills, and ridges. These soils are east of Allegros Mountain and Luera Peak area.	Motoqua Datil Abrazo	16
Shallow and moderately deep, well-drained level to steep soils formed in alluvia and residua derived from sandstone and shale on ridges, hills, plains, and alluvial fans. These soils are common in the Bell Peak area.	Mion Jacee Rock Outcrop	5
Deep well drained, level to sloping soils formed in alluvia on plains and alluvial fans. These soils are common in the Bell Mountain area.	Penistaja Veteado	3

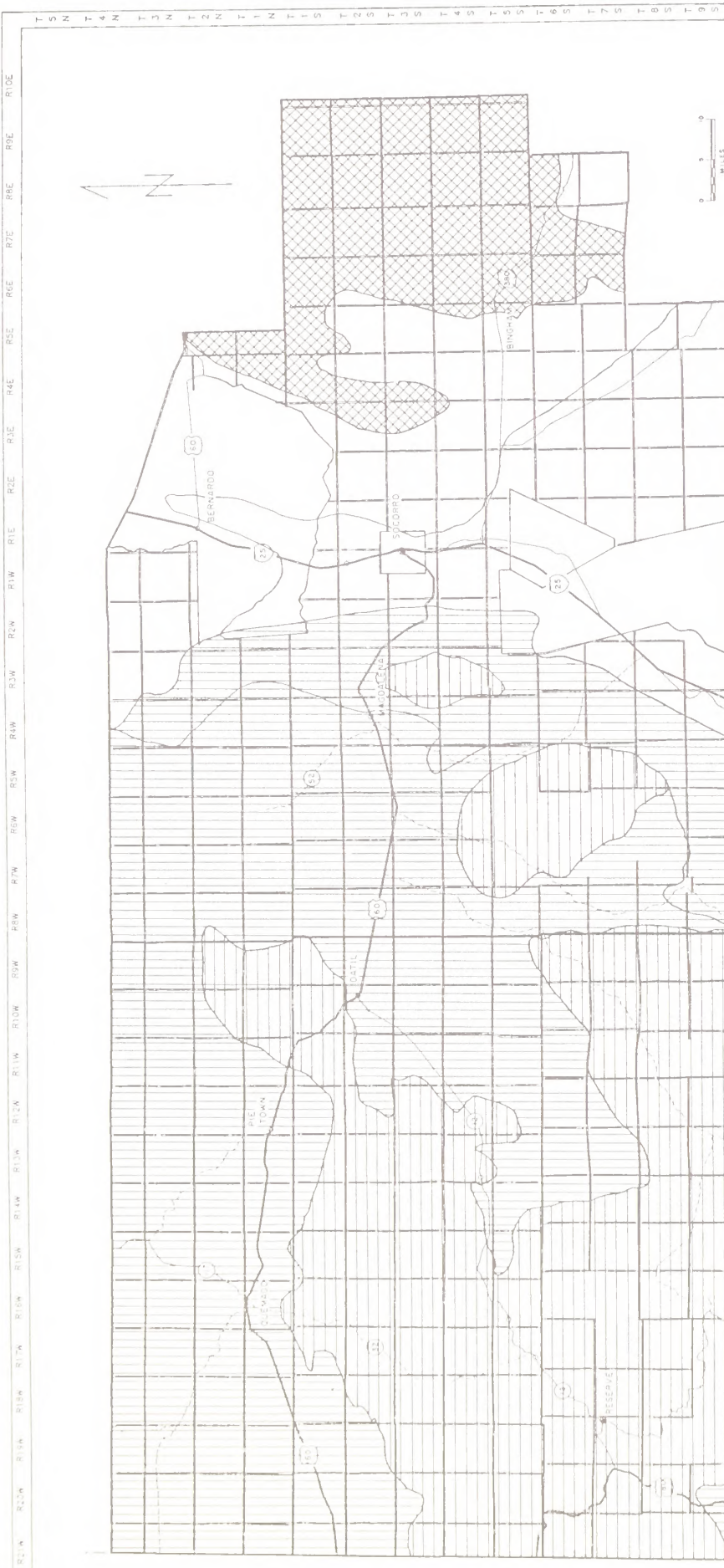
TABLE G-1 (continued)  
MAJOR SOILS OF THE SOCORRO RESOURCE AREA

Soil Type	Major Soil Series	Approximate Percent of Survey Area
Deep well-drained, level to sloping soils formed in alluvia derived from volcanic material and modified by eolian material transported by wind, on alluvial fans and hills. These soils are common in the San Augustine Plains.	Telescope Loarc Augustine	9
Shallow and moderately deep, well-drained level to steep soils formed in residia derived from basalt, tuff and conglomerate material; on hills, mountains, alluvial fans and plains. These soils are common to Pelona Mountain and Allegros Mountain.	Tolman Smilo Pleioville	13
TOTAL		100

\* Includes Chupadera Mesa analysis area (and a part of Lincoln County).

Source: Information was compiled from data contained in the Soil Surveys of Catron, Socorro (unpublished) and Lincoln Counties. U.S. Department of Agriculture, Soil Conservation Service, et al.





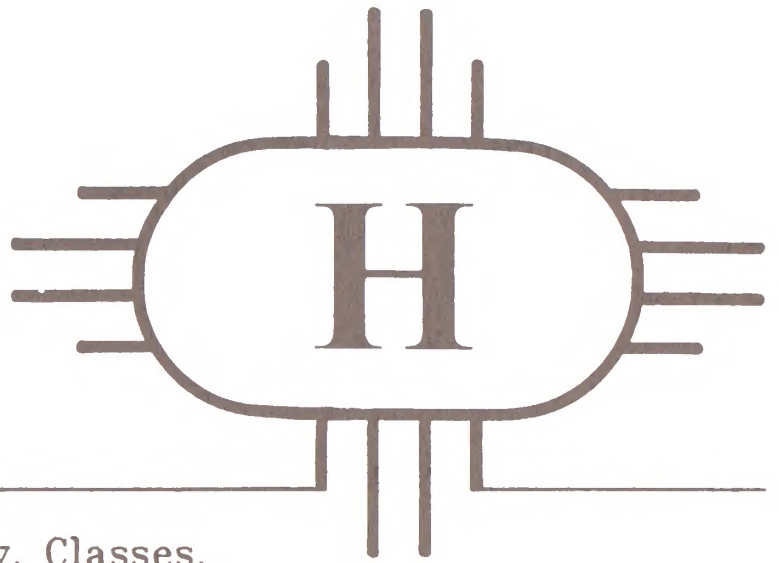
U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT-SOCORRO RESOURCE AREA  
MAP G-1  
MAJOR LAND RESOURCE AREAS



- LEGEND
- WESTERN PLATEAU
  - ARIZONA AND NEW MEXICO MOUNTAINS
  - CANADIAN - PECOS PLAINS
  - SOUTHERN DESERT







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Cultural Resource History, Classes,  
Goal System, and Use Categories

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## CULTURAL RESOURCE CLASSES, GOAL SYSTEM, AND USE CATEGORIES

### CULTURE HISTORY AND INVENTORY

#### Paleo-Indian (10,000 - 5,000 B.C.)

The earliest known inhabitants of the region are represented in the archeological record by campsites and killsites and are identified by the presence of distinctive, finely-worked stone tools. These sites are thought to indicate portions of a nomadic, hunting and gathering economy based primarily on large body-size, now extinct, fauna. Clovis points have been found elsewhere to be associated with mammoth kills, and Folsom points are most often associated with very large, extinct bison species. Paleo-Indian sites are rare, but are probably underrepresented, even in the known archeological record, because the primary cultural indicators, spear points, are so highly prized by collectors. Many individual collections observed in the SRA contain a greater number of diagnostic Paleo-Indian points than the total recorded by professional archeologists in Socorro and Catron Counties. Twelve Paleo-Indian sites have been recorded to date in the area, several of which are components of the Mockingbird Gap complex. Mockingbird Gap lies mostly on BLM lands and consists of dozens of Paleo-Indian, Archaic, and later cultural manifestations over an area nearly eighteen square miles in size. The Paleo-Indian components of this site include numerous Clovis and Folsom campsites and activity areas which offer tremendous research potential to address non-killsite aspects of Paleo-Indian lifeways. The Ake Site and Bat Cave both contain Paleo-Indian components which have been analyzed and have been major contributions to the literature. Bat Cave has been the subject of classic and recent investigations, and remains a scientific treasure with undisturbed stratigraphic deposits. The potential for other important and as yet undiscovered Paleo-Indian sites in the SRA is very high.

#### Archaic (5,000 B.C. - A.D. 0 with substantial variation)

Archaic sites are well represented -- although probably over represented -- in the SRA. Two hundred and thirty-five Archaic sites are recorded, 144 of which lie on BLM lands. The probable over representation derives primarily from the fact that lithic (chipped stone) sites in the absence of diagnostic artifacts and ceramics are frequently classified as Archaic, when they could in fact represent any cultural period in which lithic technology was employed. Even with this over representation, well-defined Archaic sites have been found and can be expected throughout the SRA. These campsites and gathering and processing locations contain distinctive dart points as well as ground stone for what appears to be more extensive and intensive use of plant resources than occurred in the previous era. These changes in the archeological record coincide with major changes in the effective environment, including the extinction of the Pleistocene fauna, and they reflect a shift to a more generalized subsistence strategy. An alternative explanation, offered by Dr. Irwin-Williams, postulates an out-migration of Paleo-Indians and in-migration of a generalist desert adaptation from the west. An ever-increasing number of late-Paleo, early-Archaic sites recorded in the SRA holds great promise for addressing the adaptation/migration question. As noted earlier, the SRA is also the primary region in New Mexico of overlap of traits of Archaic traditions, usually ascribed to cultural distinctions, that are centered to the north and southwest. Archaic sites in the SRA offer special opportunities for research designed to investigate interpretations of cultural and functional distinctions in the archeological record.

#### Developmental Pueblo and Pueblo (A.D. 0 with substantial variation - 1540)

In Socorro and Catron Counties, 1640 sites of developmental pueblo and pueblo origin have

been recorded. Three hundred and eighty-three lie on BLM land. Of the total sites on all lands, 1034 are recorded as Anasazi and 606 as Mogollon; on BLM lands, these cultural designations are 355 and 28, respectively. The problems of making and using such cultural distinctions should become apparent in the following discussion. The development of the Pueblo culture, both Mogollon and Anasazi, coincides with increasing use of horticulture and agriculture and storage of cultivated products as a greater portion of the resource base. Sites within SRA have already played a key role in the development of theory and models for the adoption of agriculture in the New World. Bat Cave, which lies on BLM land, has contributed enormously to the literature of this subject, through early investigations and reinvestigations now in press; it still retains massive stratified deposits for future study. The very early dates attributed to corn remains at Bat Cave have been questioned and await clarification by recent work; but regardless of the date finally established, it is clear that corn and other cultigens were known in the Southwest long before they were adopted as the primary component of the subsistence base. That is, there was no "discovery" of agriculture that touched off a major shift from hunting and gathering to sedentary village life. In both the Mogollon and Anasazi areas, the evidence has long suggested that the shift was gradual, and although it always granted two or three centuries of variation in different regions (centered around A.D. 0), more recent data suggest that the transition was far more variable than was even thought before. There are numerous schemes employed to categorize changes observed in Mogollon and Anasazi remains over time, and various researchers have assigned different dates to named periods and phases. In general, however for both cultures the earliest, developmental period is first represented by a shift from the mobile, Archaic lifeway to the construction of pit shelters and storage facilities. These site features suggest a semisedentary strategy employing agriculture or horticulture (the latter may well have been a component of the Archaic lifeway) as an increasingly significant component of the resource mix.

From the earliest periods, there are differences of substance and style that are interpreted to note cultural distinctions. Mogollon pit houses employ attributes of construction which distinguish them from Anasazi pit houses of the same time periods, and many more traits distinguish the two archeological cultures, with pottery a particularly distinctive indicator. Mogollon utilitywares were fired in an oxidizing atmosphere to produce a brownware, while Anasazi utilityware was heated in a reducing atmosphere to result in a grey color. Decorated pottery also differs in design, even when colors may be similar. These variations in the archeological record continue through time, although the broadest patterns of both cultures are roughly parallel. A Mogollon site of any time period in the Mogollon core area can be clearly distinguished from an Anasazi site of the same time period in the Anasazi central area based upon a wide variety of attributes, even though settlement patterns may be similar. These distinctions are far less clear in Socorro and Catron Counties, where traits overlap and occur together in the same sites. As discussed earlier, research in this "frontier" region, which is largely defined geographically by the SRA, would benefit from a departure from models based upon the notion of migrations into the area by one or the other group, to a model of an indigenous evolution from hunting and gathering to an agriculturally based economy. In Catron County, conditions can be argued which, in theory, could predicate the development of a distinct cultural adaptation (cf. Stuart and Gauthier 1984: 128 - 130). This is an attractive model, given the well documented, intensive occupation of the headwaters of the Little Colorado, a northward shift of large sites after abandonment at about A.D. 1350, and the presence of proto-Zuni ruins and modern Zuni--a linguistically unique Pueblo group--nearby to the north. A similar, localized cultural development may have also occurred in Socorro County leading to the development of those cultures first encountered by the Spanish and now known archeologically as the Piro and Tompiro.



Over the years, different researchers have proposed various schemes to classify the developmental changes observed in the Mogollon and Anasazi archeological record. Stuart and Gauthier (1984: 178) provide a comparison of six cultural/temporal schemes presented by different researchers for the Mogollon alone. At least as many researcher-specific schemes exist for the Anasazi, with an even greater number of subregional sequences. These cultural/temporal distinctions are dynamic, by number, and are discussed in detail by Stuart and Gauthier (1984), Berman (1979), and Tainter and Gillio (1980), all of which are incorporated by reference. Rather than attempt to reconcile the multitude of existing classification schemes, the discussion here will center on general trends in adaptation over time which, to a large part, are common to both Anasazi and Mogollon--and the indigenous populations of the "overlap" region.

In the first few centuries before and after A.D. 0, horticulture or agriculture became of increasing importance for some groups throughout the Southwest. Although this change in adaptation spans several centuries and affected populations in different subregions at different times and to different intensities, the changes in lifeways were sweeping in comparison to the 5,000 years of nearly static hunting and gathering that preceeded it. Although apparent from the archeological record all along, researchers are now stressing the proposition that hunter and gatherer groups persisted in many regions, and a great variety of adaptations and interactions may have occurred, including returns from agriculture to hunting and gathering subsistence. With the adoption of agriculture, important changes in technology, settlement patterns, and presumably, social structure occur. Notably, ceramic technology develops, and at least semipermanent residence is required to cultivate crops, with residential and storage structures, which in most cases were unfeasible for mobile hunter/gatherers. Throughout the Southwest, the earliest identifiable residential shelters of this era are structures constructed over an excavated floor, described as "pithouses." Early in the sequence of development of

sedentary agriculture, pithouse clusters occur which suggest aggregated populations in excess of what would be expected to be optimal for hunter/gatherer group size. With enlarged group size, the labor intensity of agriculture, and at least semisedentary residential units, significant changes in social structure are expected and are observed under similar circumstances in modern times. Investigations of prehistoric culture change and deductive approaches to studies of social structure are important focuses of modern archeology globally, and a vast body of literature centers on this transition in the American Southwest. In the Anasazi region, these early stages of agriculturally-based village settlement patterns are described as Basketmaker II and Basketmaker III, and in the Mogollon region, under different names, but predominantly Pinelawn through Three Circle(after Stuart and Gauthier 1984: 135). Although there is considerable variability in sites of this era, the general trend is toward larger aggregations of population and increased reliance upon storage of cultivated products.

At about A.D. 700, changes occur in the structure of settlements; residential habitation structures change from semisubterranean pithouses to square and rectangular, often contiguous, surface structures, which had previously been employed for storage. Thus, the structure of a settlement changes from one or more pithouses with adjacent surface storage, to small surface pueblos, with one or more pit houses retained for purposes other than habitation. This was almost certainly for the practice of religious functions, as an antecedent to the later well-defined prehistoric and modern kivas. These changes in site structure and other trait changes, especially in distinctive decorated pottery, define the Pueblo I period of the Anasazi region and, perhaps with more variability, the corresponding phases of the Mogollon. This period apparently saw a marked increase in population, with surface village sites far more common near all major watersheds than their pithouse village predecessors.

By about A.D. 900, changes occur across the Southwest which, like all other transitions in the archeological record, await definitive explanation. What occurs in the archeological record is a uniting of the large number of smaller villages into fewer, but larger and more formally arranged pueblos. Small unit pueblos and "field houses" associated temporally with the larger structures remain in outlying agricultural locations. Presumably, this represents a change in agricultural logistics and is suggestive of changes in social structure and organization. This Pueblo II phase produced a large number of sites which, on scale of size and architecture, are some of the best known of the region. The BLM site known as Cox Ranch Pueblo, listed on the National Register of Historic Places with the misnomer, "Mogollon Pueblo," is the largest known Reserve Phase, Pueblo II village.

The Pueblo III period, or Tularosa Phase in western Catron County, seems to suggest another shift in agricultural logistics to meet changing conditions again with accompanying changes in settlement pattern and placement, toward drainage headwaters, almost universally throughout the SRA. The character of the settlements again appears to be toward larger aggregations of populations and fewer total sites, which suggests a shift toward more labor intensive agriculture, such as runoff channeling, as a corporate subsistence strategy. A recent resurgence of work and interest in the archeology of Catron County as a result of coal development holds great promise in approaching explanations for the many questions remaining for archeological solution in that region.

By the time of the Pueblo I and II, Reserve and Tularosa phases in Catron County, the Piro and Tompiro peoples had emerged as distinguishable archeological groups on the Rio Grande and Chupadera Mesa regions to the east. Unlike the indigenous population of Catron County, which vanishes (perhaps northward to the Zuni area) upon abandonment of that region at about A.D. 1350, the Piro and Tompiro groups continued in place through the Pueblo IV period. These people were met

in their homeland by the earliest Spanish explorers in the mid 1500s. Within the field of archeological study, Socorro County parallels Catron, in having a distinguished early history of investigation by H.P. Mera and a notable amateur, Yeo, both of whom recorded hundreds of structural ruins in the Rio Abajo region of the Rio Grande and the surrounding uplands (the Rio Abajo being the portion of the River from about Belen to Truth or Consequences). Although this early inventory work made clear the presence of an extensive and important prehistoric occupation, very little scientific investigation followed in Socorro County. It was not until 1981 that a Piro site (Teypama, managed by the BLM as a National Register property) was partially excavated in conjunction with a BLM stabilization effort. Since then, a jointly funded effort by the New Mexico State Historic Preservation Division, the BLM, and Bureau of Reclamation, produced the important volume by Marshall and Walt (1984), which brought long overdue attention to Rio Abajo prehistory and history. Considerably more attention has been paid to the Tompiro region to the east, out again, until very recently, most of this has centered just outside the SRA in the major Spanish mission Tompiro villages which are now Salinas National Monument (Gran Quivera, Abo, and Quarai). In 1986, the New Mexico State Historic Preservation Division and Eastern New Mexico University undertook a major project of detailed recording of previously recorded Tompiro village ruins in eastern Socorro County (presently in press) which is certain to bring renewed interest to the extensive and intensive prehistoric and historic occupation of the Chupadera Wash and Chupadera Mesa region. A number of sites related to this occupation are recorded on BLM lands in that region, two of which, known as the Playa Pueolos, hold particular interest. These large pueblos were not located on major water courses, but rather are adjacent to relatively small (ca. one square mile) internal drainage plains (playas). These village ruins, which, if early dating through ceramic seriation is correct, were occupied over extraordinarily long periods (one recorder suggests A.D. 1150 through 1700). This fact, if true, would be



particularly valuable, given the enormous research potential of data recovered from such an occupation for comparison with sites in nearby regions which underwent abandonments.

The end of the prehistoric era in New Mexico is set at the date of the first European explorers, the Coronado Expedition, in A.D. 1540. Coronado and the following expeditions of the late 16th century encountered and documented Piros and Tompiros in their homelands. A.D. 1540 is also set as the distinction between the Anasazi Pueblo IV and Pueblo V periods.

#### The Historic Period (A.D. 1540 - The Present)

The historic period is almost invariably the point of discussion of the Athapaskan (Navajo and Apache) "intrusion" into the Southwest. The 1930s arguments that Athapaskans may have been the cause of Pueblo II - III and earlier defensive sites and regional abandonments have fallen into disfavor (along with the notion that the strange Gallina culture, whose sites coincide with the traditional Navajo homeland in north-central New Mexico, developed into the Navajo). The case for the late arrival of the Athapaskans from the north (they are linguistically associated with groups on the Northwest Coast and California) is based on two primary arguments. First, identifiable Navajo sites (defined by hogan ruins and/or pottery) had not been dated prior to about A.D. 1500 and second, the Coronado expedition did not report encountering mobile hunter/gatherer groups until they reached the plains of eastern New Mexico and western Texas. However, recent dates obtained from definable Navajo sites may push this date back several centuries, and it has been argued (Carroll et. al. 1979) that the construction of hogans and the use of pottery may be more a measure of a change in Athapaskan lifeways than a signal of an in-migration of a linguistic group. The second argument for the late arrivals of the Athapaskans is also open to question since the Espejo expedition in the 1580s encountered "friendly mountain people" at Seboyeta, were told of a group at war with Acoma a few miles away, and, on return from Hopi, encountered a third, non-pueblo group

probably between Gallup and Grants - all of which were distinguished from the Pueblo tribes and each other by the Spanish chroniclers. The history of Navajos and Apaches then, may very well include prehistory, and is wide-open to future investigation. The earliest date for a Navajo site in SRA was obtained very recently from an excavated hearth with distinctive Navajo ceramics, and is radiocarbon dated at A.D. 1560 plus or minus 90; this dates 250 years before the establishment of the Navajo mission at Seboyeta which supposedly brought the Navajos out of their northern homeland for the first time.

Only 44 Navajo sites have been recorded in Socorro and Catron Counties, seven of which lie on BLM lands. Most of these are recorded in the region of the Rio Salado surrounding the present Alamo Navajo Reservation. Even fewer sites have been attributed to Apache occupation. Even if the possible early presence of Athapaskans is not accepted, this low frequency of related sites is problematic, since the groups certainly made their presence known to Spanish and later settlers in the region through the late 1800s. This suggests that Navajo and Apache sites of the historic era, when the groups are known to have been in the region, are either invisible, very difficult to identify, or are being misidentified among the various classifications of lithic scatters. The "invisible" suggestion is not facetious; some historic accounts place Apache camps in the most dense brush of river washes, such as along the Rio Salado, where sedimentation and special care by the occupants under warfare conditions may well leave nothing in the archeological record.

The Rio Abajo region of the Rio Grande played an early role in the colonization of New Mexico from Mexico, not because of the Apache threat, the region was not permanently settled until relatively late. The area was colonized in the early 1800's, but it was not until the late 1800's, after the defeat and incarceration of the Navajos and Apaches, that permanent settlements were able to prosper along the River. Before this, the region was

notorious as a dangerous travel route, known as the Jornada del Muerto (Journey of Death), and, on journey's end, as safe-haven among the friendly Piro Indians. The place name "Socorro" was given to the pueblos in the location of the present town, because the Spanish found succor there at the end of the cross-desert journey.

The Jornada del Muerto departed from the river course north of present day Las Cruces because the extremely rough, dissected terrain created by the many small tributaries of the Rio Grande effectively prevented travel. The route passed behind the low, rough mountains of the east side of the River, on what is now WSMR, and returned to the river route at about present day San Marcial. For the hundred miles or more of the Jornada del Muerto, travelers were without water sources, bogged down in difficult travel across loose desert sand, and plainly visible at great distances to the Apaches, who operated out of the mountains bordering both sides.

The Spanish established missions among the Piros and Tompiros, at Socorro and the Salinas pueblos mentioned earlier. In 1680, when the northern Pueblo tribes banded together in the Pueblo Revolt and drove the Spanish from New Mexico, the Piros took particular note of the fact that they were not included in the secret communications among the tribes that preceded the revolt and retreated south with the Spanish to the location of present day El Paso/Juarez. Descendants of the Piros are thought to include part of the population of Ysleta del Sur Reservation in El Paso. From historic and archeological evidence, it appears that the Rio Abajo pueblo province was totally abandoned in 1680. The Apaches, of course, stayed on, and through their fierce raiding, made the region essentially uninhabitable for outsiders for the next two hundred years.

In 1821, the Mexican Revolution made all Indians citizens of Mexico in a sweeping democratic move; but, because of problems in Old Mexico, the new government was never able to consolidate power in the north. In 1846, General Kearney took possession of New Mexico

for the United States, literally in a walk-over. By this time, Catron and Socorro Counties had been totally abandoned by pueblo groups, while Apaches and Navajos continued to plague travelers in the unsettled area. To thwart this threat, the U.S. government established Fort Conrad near San Marcial, and replaced it a few years later, in 1854, with Fort Craig, one of the largest military installations in the west. The Fort Craig ruins are now managed by the BLM as a National Register property. Even with Fort Craig in the area and an outpost at Ojo Caliente in the San Mateo mountains, travel and prospecting in the region remained a risky business, and settlement at any distance from the main fort was extremely limited. It was not until the nearly total decimation of the Navajos and later capture of the last Apache bands that European settlement began to expand into the region. Although the Navajo/Apache capture was nearly complete, some bands are said to have escaped detection and their refuge during the Bosque Redondo period (early 1860s incarceration at Fort Sumner), is placed in western Socorro and Catron Counties and bordering regions of Arizona. The small Alamo Navajo band in western Socorro County is often said to be composed of Navajos and Apaches of the bands who were never captured. A definitive history of the Alamo band has yet to be produced.

By the late 1800s, small settlements populated by people of Spanish descent appeared every few miles along the Rio Grande (see Marshall and Walt, 1984). One of these, Parida, lies partially on BLM lands and has recently been nominated to the National Register. Other Spanish settlements were established to the west at Mangus, Quemado, and other locations.

In the early 1900s, under the Homestead Act, isolated ranches and attempts at farming occurred across the western portion of the SRA. Possibly because of the scarcity of surface water, eastern Socorro County was homesteaded somewhat later, often as late as the 1930s. Many examples of the archeological remnants of failed homesteads are present on BLM lands, often because upon failure, the lands were returned to the government. The



history of homesteading, particularly in Catron County, is fascinating and has been outlined by Kelley (in Camilli et. al., n.d.). In some areas, the homestead ruins represent more than just natural failure, and the region has a full history of cattle barons blocking up all water sources with phoney homesteads established by their own men, and at least one or two armed uprisings of the "sodbusters." Homestead ruins from this era are managed and protected under the same laws and regulations which affect prehistoric sites, but have unfortunately received little serious attention, given their importance to the history of the region and the settlement of the west.

#### CULTURAL RESOURCE MANAGEMENT GOAL SYSTEM

The major cultural resources program input into the Resource Management Plan (RMP) process is to form management objectives for specific cultural resource special management areas (SMA). These management goals are general in nature and normally do not call for specific on-the-ground actions. The three goal categories that have been incorporated into this planning effort include 1) Management for Public Values, 2) Management for Conservation, and 3) Management for Information Potential.

##### 1. Management for Public Values

The goal of this category is the management of sites, locations, features, and objects identified as having attributes which contribute to maintaining the heritage, belief systems, folkways, and existence of a social and/or cultural group. Considerations for management in this category also include access to and maintenance of locations, sites, features, and objects of traditional religious or spiritual value; use and possession of sacred objects; and the freedom to worship through ceremonies and other traditional rites.

##### 2. Management for Conservation

The goal of this category is the management of areas, sites, locations, districts, or

features by removing them from consideration for scientific or historic study which would result in their physical alteration. Properties managed under this goal could also possess one or more of these attributes: uniqueness or relative scarcity of type, class, condition, affiliation; research potential that surpasses current state of the art; or singular historic importance or architectural interest. Such cultural resource properties would remain in this category until specified provisions are met in the future.

##### 3. Management for Information Potential

The goal of this category is the management of cultural properties so that they would remain suitable for consideration as the subject of scientific or historical study utilizing research techniques currently available. Such study could, if warranted by an approved research design, result in the controlled physical alteration of that property. A cultural property in this category need not necessarily be conserved in consideration of an approved research or data recovery (mitigation) proposal.

Management under this category could allow controlled experimental study which could also result in physical alteration to the property. This work could be performed by the BLM or other entities concerned with the management of cultural properties for purposes of obtaining specific information leading to a better understanding of kinds and rates of natural or human-caused deterioration, effectiveness of protection measures, and similar lines of inquiry which would ultimately aid in the management of cultural resources.

#### CULTURAL RESOURCE USE CATEGORY SYSTEM

In addition to the use allocation recommendations made through management goal category assignment during the land-use planning (RMP) stages, another vital step occurs during the next, more specific planning state, the Cultural Resource Management Plan (CRMP) or activity plan. This step or

allocation commitment comes after the completion of the RMP which establishes the general management goals for a particular site or combination of sites. The activity plan based on comprehensive inventory and analysis commits specific actions and assigns, as part of the activity planning process, each site to one or more of the following use categories.

1. "Current scientific use" means that a cultural property is the subject of an ongoing scientific or historical study or project, under permit, at the time of evaluation; upon completion of that study or project, the cultural property will be assigned to one of the other use categories.

2. "Potential scientific use" means that a cultural property is presently eligible for consideration as the subject of scientific or historical study utilizing research techniques currently available, including study which would result in its physical alteration, and it need not be conserved in the face of an appropriate research or data recovery (mitigation) proposal.

3. "Conservation for future use" means that because of scarcity of similar cultural properties, a research potential that surpasses the current state of the art, singular historic importance or architectural interest, or comparable reasons, a cultural property is not presently eligible for consideration as the subject of scientific or historical study which would result in its physical alteration. It is worthy of segregation from other land or resource uses which would threaten the maintenance of its present condition, and that it will remain in this use category until specified provisions are met in the future.

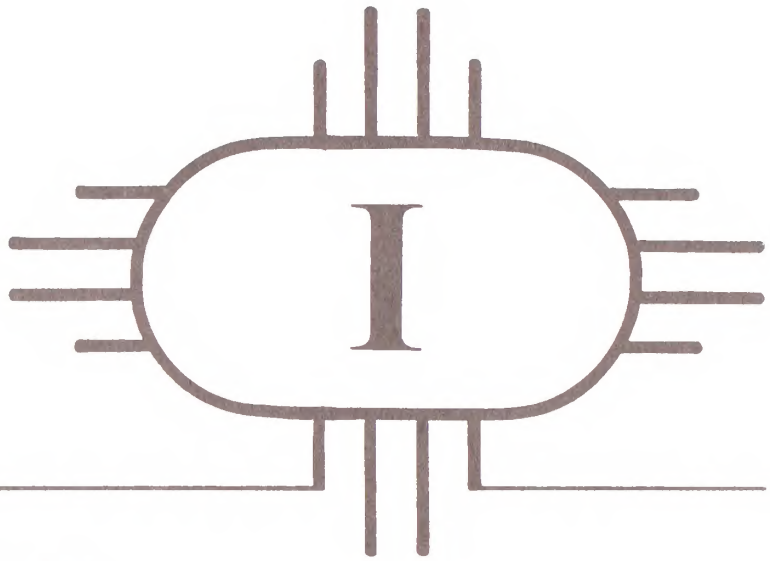
4. "Management use" means that a cultural property is eligible for controlled experimental study which would result in its physical alteration, to be conducted by the BLM or other entities concerned with the management of cultural properties, for purposes of obtaining specific information leading to a better understanding of kinds and rates of natural or human-caused deterioration, effectiveness of protection measures, and similar lines of inquiry which would ultimately aid in the management of cultural properties.

5. "Socio-cultural use" means that a cultural resource is perceived by a specified social and/or cultural groups as having attributes which contribute to maintaining the heritage or existence of that group, and is to be managed in a way that takes those attributes into account, as applicable.

6. "Public use" means that a cultural property is eligible for consideration as an interpretive exhibit-in-place, a subject of supervised participation in scientific or historical study, a subject of unsupervised collecting under permit, or related educational and recreation uses by members of the general public.

7. "Discharged use" means that a cultural property, previously qualified for assignment to any of the first six categories, no longer possesses the qualifying characteristics for that use or for assignment to an alternative use, that records pertaining to it represent its only remaining importance, and that its location no longer presents a management constraint for competing land uses.





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Recreation/Off-Road Vehicles

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## RECREATION OPPORTUNITY SPECTRUM

The Recreation Opportunity Spectrum (ROS) (BLM Manual 8320) provides a framework for stratifying and defining classes of outdoor recreation opportunity environments. The premise is that recreation quality is best assured through the availability of a variety of outdoor recreation opportunities spanning the entire spectrum. The spectrum ranges from essentially natural, low-use areas (resource-dependent recreation opportunities) to highly developed, intensive use areas (facility/vehicle-dependent recreation opportunities).

Recreation opportunities are expressed in terms of three principal components: the types of environmental settings available, the variety of activities possible, and the types of experiences that can be achieved through participation.

The primary determinant of ROS Classes is the setting opportunity. It describes the overall outdoor recreation environment where activity occurs, influences the types of recreation activity that can occur, and ultimately determines the resulting types of experience that can be achieved.

Activities are not bound to opportunity classes and most activities can take place in some shape or form throughout the spectrum. However, general activity opportunities can be described per ROS class.

A particular type of experience is related to the environmental setting and activity engaged in and also in individual differences based on a number of extraneous variables (i.e. background, education, sex, age, place of residence, etc.). The opportunity for a particular experience can be described in a general way.

### DELINEATION OF ROS CLASSES

After determining the setting, activity, and experience opportunities, areas are assigned to one of six ROS Inventory Classes. Each class is delineated to identify the available

outdoor recreation opportunity that exists. The six ROS classes are described below in general, nontechnical terms.

#### Primitive Class

The setting opportunity consists of contiguous areas of about 5,000 acres, lying more than three miles from the nearest point of motor vehicle access, with essentially unmodified natural landscapes, where there is little evidence of other people and that are almost completely free of management controls. Activity opportunities consist of resource-based recreation and generally include overnight backpack camping, nature photography, backcountry hunting, canoeing, and snowshoeing. The experience opportunity consists of the chance to achieve a strong sense of solitude and isolation from human civilization, to feel as one with nature, and to encounter a great degree of personal risk and challenge.

#### Semi-Primitive Nonmotorized Class

The setting opportunity consists of contiguous areas of about 2,500 acres, lying at least one-half mile from the nearest point of motor vehicle access, with predominantly natural landscapes, where there are some evidences of other people, and where there are very few management controls. Activity opportunities consist of resource-based recreation and generally include backpack camping, nature viewing, backcountry hunting, canoeing, and cross-country skiing. The experience opportunity consists of the possibility to avoid the sights and sounds of people, achieve a high degree of interaction with nature and to experience a great deal of personal risk and challenge.

#### Semi-Primitive Motorized Class

The setting opportunity consists of contiguous areas of about 2,500 acres, sometimes along unmaintained two-track routes, having mostly natural landscapes where there are some evidences of other people but numbers and frequency of contact seem to remain low, and

where there are few management controls. Activity opportunities consist mainly of resource-based recreation and generally include day hunting, climbing, vehicle trail riding, mountain biking, hiking, and snowmobiling. The experience opportunity consists of the chance to enjoy isolation from human civilization and technology (the lack of contacting other people), achieving a high degree of interaction with the natural environment, and feeling a moderate degree of personal risk and challenge.

#### Roaded Natural Class

The setting opportunity consists of areas alongside or near improved and maintained roads, with naturally appearing but human modified landscapes where there are often evidences and moderate numbers of people, and where there are visible management controls and developments. Activity opportunities consist of a mixture of resource and facility/vehicle-dependent recreation and generally include wood gathering, downhill skiing, fishing, off-highway vehicle driving, interpretative uses, motorboating, and vehicle camping. The experience opportunity consists of the chance to perceive a sense of security in the moderate number of visitor encounters and intermittent human developments available and the chance for some personal risk taking and challenges.

#### Rural Class

The setting opportunity consists of areas alongside or near paved highways, with heavily modified landscapes where there are considerable evidences or numbers of other people, and where management controls and developments are often seen. Activity opportunities consist of mostly facility/vehicle-dependent recreation and generally include vehicle sightseeing, horseback riding, on road bicycling, golf, swimming, walking, picnicking, and outdoor competitive games. The experience opportunity consists of the chance to enjoy modern visitor conveniences, moderate to high levels of interactions with other people and a feeling of security from personal risk.

#### Urban Class

The setting opportunity consists of areas near paved highways, where the natural landscape is dominated or replaced by human made developments, where there are great numbers and evidences of other people, and where management controls are numerous and dominant. Activity opportunities are facility/vehicle-dependent and generally include concerts, wave pools, amusement parks, zoo/fair visits, vehicle racing facilities, spectator sports, and indoor competitive games. The experience opportunity consists of the availability of numerous modern conveniences, being entertained, encountering large numbers of people, interacting with an exotic and manicured environment, and a feeling of being very secure with personal risk subdued.

#### MANAGEMENT OBJECTIVES FOR ROS CLASSES

##### Primitive Class Objective

The primitive class is managed to be essentially free from evidence of humans, human-induced restrictions, and on-site controls. Motorized vehicle use within the area is not permitted. The area is managed to maintain an extremely high probability of experiencing isolation from the sights and sounds of others (not more than three to six group encounters per day), independence, closeness to nature, self-reliance through the application of backcountry skills, and an environment that offers a high degree of challenge and risk.

Backcountry use levels and management of renewable resources are dependent on maintaining natural ecosystems and primitive experience levels. The consumption of renewable resources is subject to the protection of backcountry recreational values. Frequency of managerial contact with users is very low.

##### Semi-Primitive Nonmotorized Class Objective

Semi-primitive nonmotorized areas are managed to be largely free from the evidence of



humans, human-induced restrictions, and on-site controls. Motorized vehicle use is prohibited (except by permit). Limited facilities for the administration of livestock and visitor use are allowed, but off-site administration is encouraged. Project designs should stress protection of natural values and maintenance of the integrity of a predominantly natural environment. Areas are managed to maintain a good probability of experiencing minimum contact with others, self-reliance through the application of backcountry skills, and an environment that offers a high degree of risk and challenge.

Backcountry use levels and management of renewable resources are dependent on maintaining ecosystems comparable to naturally occurring ecosystems. The consumption of renewable resources is subject to the protection of backcountry recreational values. Grazing is allowed, subject to restrictions placed on use of motorized vehicles. Facilities associated with grazing are limited to those necessary for maintaining existing numbers, adequate distribution, and seasons of use, consistency with allotment management plans. Mineral development is subject to valid existing rights. Frequency of managerial contact with users is low.

#### Semi-Primitive Motorized Class Objective

Semi-primitive motorized areas are managed to provide a naturally appearing environment. Evidence of humans, restrictions, and management controls are present but subtle.

Motorized vehicle use is permitted. Concentration of users should be low. On-site interpretative facilities, low standard roads and trails, trailheads, and signing should stress the natural environment in their design and be the minimum necessary to achieve resource objectives.

The consumption of natural resources is allowed. In the review of plans of operations, utility corridors, rights-of-way, and other surface-disturbing projects, effort is taken to reduce their impacts on the natural environment. Frequency of managerial

contact with visitors is low to moderate on trails and primitive roads.

#### Roaded Natural Class Objective

Roaded natural areas are managed to provide a natural-appearing environment with moderate evidences of the sights and sounds of humans. Motorized use is permitted. Concentration of users is moderate with evidence of other users prevalent. Resource modification and utilization practices are evident, but harmonize with the natural environment. Development of facilities for motorized use is provided for in any proposed construction standards and designs of facilities.

Placement of rights-of-way, utility corridors, management facilities, and other surface-disturbing activities would be favored over placement in semi-primitive nonmotorized or semi-primitive motorized areas when applicable. The consumption of natural resources is allowed except at proposed or developed trailheads, developed recreation areas, and where geological, cultural, or natural features are interpreted as major themes. Frequency of managerial contact with visitors is moderate.

#### Rural Class Objective

Rural areas are managed to provide a setting that is substantially modified in foreground and background views with moderate to high evidences of the sights and sounds of civilization. Motorized use is permitted. Concentration of users is sometimes high with the evidences of other users being substantial. Resource modification and utilization practices are sometime dominant in a somewhat manicured environment. Standards for road, highway, and facility development are high for the purposes of user convenience. Frequency of managerial contact with visitors is moderate to high.

#### Urban Class Objective

The SRA does not manage for urban types of recreation opportunities.

## IMPLEMENTATION OF ORV DESIGNATIONS

### Overview

The purpose of this appendix is to provide general information about Bureau of Land Management (BLM) policy and procedures for off-road vehicle (ORV) designations. BLM Manuals 8341 and 8342 contain a more complete discussion. ORV designations are administrative, not Congressional, which allow management flexibility in order to be responsive to changes in the environment.

### Objectives

All public lands must be designated as "open," "limited," or "closed" to motorized vehicle use to meet public demand or needs, to protect resources and the safety of public land users, and to minimize conflicts among the various public land users and adjacent land owners. Additionally, existing ORV designations are evaluated and revised, if necessary, whenever existing Management Framework Plans (MFP) are amended or when Resource Management Plans (RMP) are prepared, revised, or amended.

### Policy

ORV designations are completed as an integral part of the normal BLM planning system unless problems or conflicts preclude adhering to the planning schedules.

ORV designation allocations are not contingent on the BLM land-use planning system.

Notices of ORV designations are published in the Federal Register within one year after completion of decisions allocating ORV use.

Designations apply to all motorized vehicles as defined by 43 Code of Federal Regulations (CFR) 8340.0-5(a) regardless of how the vehicles are being used. Only those vehicles excluded from that definition are allowed in closed areas or limited areas where use is prohibited by designation order. Necessary nonemergency use associated with BLM licenses, leases, permits, or sales may be authorized as an exclusion from that definition [see 43 CFR 8340.0-5(a)(3)] only if feasible alternatives

have been exhausted and the use is compatible with established resource management objectives. Reasonable restrictions on the types of vehicles, time of use, routes, or amount of use may be required in the authorization. Requests for mineral exploration or development access under the 1872 mining law are allowed but are subject to 43 CFR 3802 and 3809.

"Open" designations are used for intensive ORV use areas where there are no special restrictions or areas where no compelling resource protection needs, user conflicts, or public safety issues exist that warrant limiting cross-country travel.

The "limited" designation is used where vehicular use must be restricted to meet specific resource management objectives. Examples of limitations include: number or types of vehicles, time or season of use, permitted or licensed use only, use limited to existing roads and trails, use limited to designated roads and trails, or other limitations necessary to meet resource management objectives (including certain competitive or intensive use areas which have special limitations).

Areas or trails are designated "closed" if it is necessary to protect resources, promote visitor safety, or reduce user conflicts. Motorized access will be allowed in closed areas by administrative personnel and permittees who have specifically requested an entrance permit consistent with other privileges.

Brochures (with maps) and other public information and educational tools (such as news releases, articles, talks to groups, environmental and resource education, etc.) inform users of opportunities and restrictions; on-site placement of signs is used to supplement these tools. Signs should be restricted to marking specific problem areas and major entry points.

### Designation Methodology

Needs and concerns for resource protection, promoting public safety, and reducing



conflicts associated with motorized vehicle use on public lands are identified by BLM personnel and through public involvement efforts. RMP criteria guide policy and manual direction fulfillment. The BLM assembles the appropriate data to justify ORV designations and completes new inventories when existing information is insufficient to resolve problems. The ORV designations are allocated in the formulation of RMP alternatives and decided in the selection of the preferred alternative. After approval of the selected RMP, a designation order is published in the Federal Register and entered in the District Designation Order Register. Implementation plans are then developed to define and document a specific course of action necessary to carry out the ORV allocation decision. Implementation plan recommendations are either implemented or included in activity plans for further planning consideration.

#### IMPLEMENTATION PLAN GUIDELINES

The implementation plan is an internal BLM document providing guidance to District and Resource Area managers on how to implement RMP decisions. It defines and documents a specific course of action necessary to achieve ORV designation decisions.

By definition, the implementation plan is brief and more concise than an activity plan. It identifies only those actions that are essential to implement the ORV designation decisions. If activity plans are developed, the information from implementation plans are incorporated into them. However, the ORV implementation plan remains a separate entity to provide continuity for management programming, budgeting, program support and to respond to public requests. A copy is maintained at the District and Resource Area offices.

The plan should contain the following information:

a map and narrative clearly showing the area's designation(s), the reasons for the designation(s), and any additional information needed to ensure public knowledge and understanding of the

reasons for the designation. Design, scale, and format of maps are dependent on the detail needed to ensure adequate interpretation.

- the brochures and maps needed to notify the public of the ORV designations.
- the strategy for boundary, general information, and directional signing and the number, type, and location of signs.
- the number, type, and location of physical constraints, such as barriers, fences, gates, ditches, etc.
- public notices needed to inform the public about details of designations (such as announcements on radio or television, newsletters, letters to key interest groups, and public meetings).
- an installation schedule for signs and physical constraints.
- methods and schedules for supervising motorized field procedures and arrangements needed to enforce compliance with ORV designation decisions including cooperative agreements, user group assistance, trespass notices, citations, arrests, or other actions.
- maintenance standards for signs and physical constraints.
- estimates of all costs, work months, and personnel needed to meet implementation requirements.

#### Emergency Limitations or Closures

Limitations of use or closure of areas and trails on public lands to motorized vehicle use under the authority of 43 CFR 8341.2 are not ORV designations.

Whenever the authorized officer determines that motorized vehicle use will cause or is causing considerable adverse effects on resources (soil, vegetation, wildlife habitat, cultural, historic, scenic, recreation, or other resources), the area must be immediately

closed to the type of use causing the adverse effects (see 43 CFR 8341.2). Emergency limitations or closures are not used if there is sufficient time to complete standard or interim designations. They must remain in force only until one of those designations can be made or until the adverse effects are eliminated and measures to prevent their recurrence have been implemented (whichever occurs first). The steps in emergency closure are listed in Table I-1.

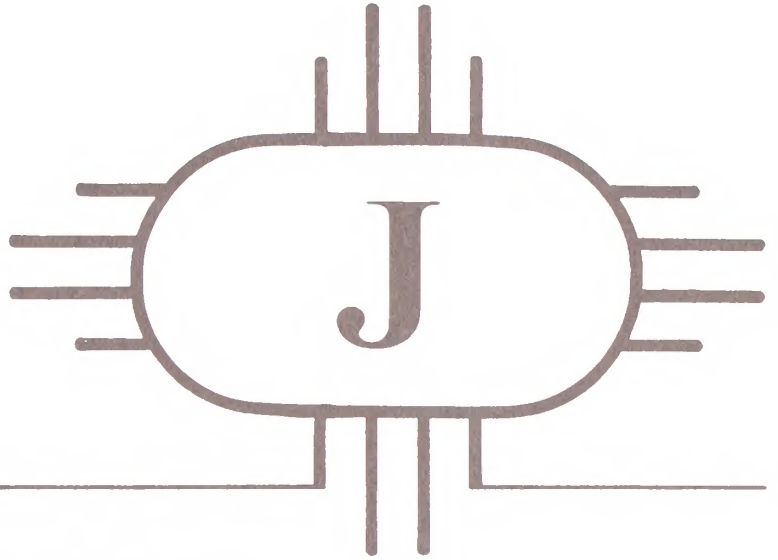
A record of the problem identification, analysis, closure order, and action taken to inform the public is maintained in the District office and is available for public review. The closure limitation is entered in the District Designation Order Register.

TABLE I-1: STEPS IN THE EMERGENCY CLOSURE PROCESS

STEP	ACTION	RESPONSIBILITY
Problem Identification	Identify and briefly document the problem that is causing considerable adverse effect.	As assigned
Analysis	Briefly document the adverse effects.	As assigned
Decision	Complete and publish the emergency order in the Federal Register.	District Manager
Implementation	Post the affected area and notify the affected persons at the earliest date possible, using the most effective means available.	As assigned

NOTE: The above actions could be completed in a very short time frame, a matter of hours, if necessary.





Visual Resource Management Classes

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## VISUAL RESOURCE MANAGEMENT

### DETERMINATION OF VRM CLASS RATINGS

Visual resource classes are categories assigned to public lands which serve two purposes: (1) an inventory tool that portrays the relative value of the visual resources and (2) a management tool that portrays management objectives.

Ratings from scenic quality classes, visual sensitivity levels, and distance zones are combined to form visual resource management (VRM) classes (Map J-1). A VRM class identifies the suggested degrees of human modification that should be allowed in a certain landscape from a visual resource standpoint.

Scenic quality classes are rated for landform, water, color, vegetation, intrusions, and uniqueness. These elements are combined, and the area is classified as Class A - unique, outstanding features; Class B - outstanding features common to the physiographic region; or Class C - features common to the physiographic region.

Sensitivity levels are determined on the basis of frequency of travel through an area, use of area, and public knowledge of the area. These elements are rated and the area is assigned a high, medium, or low sensitivity level.

Distance zones are placed in three categories: foreground/middleground zone, background zone, and seldom seen zone. The foreground/middleground zone is closest to the viewer and requires more attention and consideration in management decisions because of the great detail that can be seen in the landscape. The background and seldom seen zones are viewed in less detail by the observer and most impacts blend with the landscape because of the distance.

### CRITERIA FOR VRM CLASSES

After class ratings are completed for scenic quality, visual sensitivity, and distance zones, areas are assigned to one of four management classes. These classes are designed to maintain or enhance visual quality

and describe the different degrees of modification to the basic elements of the landscape allowed.

CLASS I: Those areas where a management decision has been made previously to maintain a natural landscape (e.g. wilderness areas, wild sections of National Wild and Scenic Rivers, and other congressionally or administratively designated areas).

CLASS II: Landscapes with Class A scenic quality, or Class B scenic quality in the foreground/middleground zone with high visual sensitivity. Changes in any of the basic elements (form, line, color, texture) caused by a management activity should not be evident in the characteristic landscape.

CLASS III: Landscapes with Class B scenic quality and high visual sensitivity in the background zone, or with Class B scenic quality and medium visual sensitivity in the foreground/middleground zone or with Class C scenery of high visual sensitivity in the foreground/middleground zone. Changes in basic elements (form, line, color, texture) caused by management activity may be evident in the characteristic landscape; however, the changes should remain subordinate to the visual strength of the existing character.

CLASS IV: Landscapes with Class B scenic quality and high visual sensitivity in the seldom seen visual zone, or with Class B scenic quality and medium or low visual sensitivity in the background or seldom seen zones, or with Class C scenery quality (except with high sensitivity in the foreground/middleground zone). Changes may subordinate the original composition and character but must reflect what could be a natural occurrence within the characteristic landscape.

### MANAGEMENT AND CONTRAST RATING OBJECTIVES FOR VRM CLASSES

For activities proposed on public lands, impacts are evaluated with the visual resource contrast rating system, a method of evaluating the visual contrast of a proposed activity with the existing landscape character.

The amount of contrast is measured by separating the landscape into its major features (land and water surface, vegetation, and structures) and then predicting the magnitude of change in contrast of each of the basic elements (form, line, color, and texture) to each of the features. Assessing the amount of contrast for a proposed activity in this manner will indicate the severity of impact and serve as a guide in determining what is required to reduce the contrast so it will meet the visual management class requirements for the area. Objectives for the VRM classes are listed below:

CLASS I: The objective of this class is to preserve the existing character of the landscape. This class provides for natural ecological changes; however, it does not preclude very limited management activity. The level of change to the characteristic landscape should be very low and must not attract attention.

CLASS II: The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low.

Management activities may be seen, but should not attract the attention of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape.

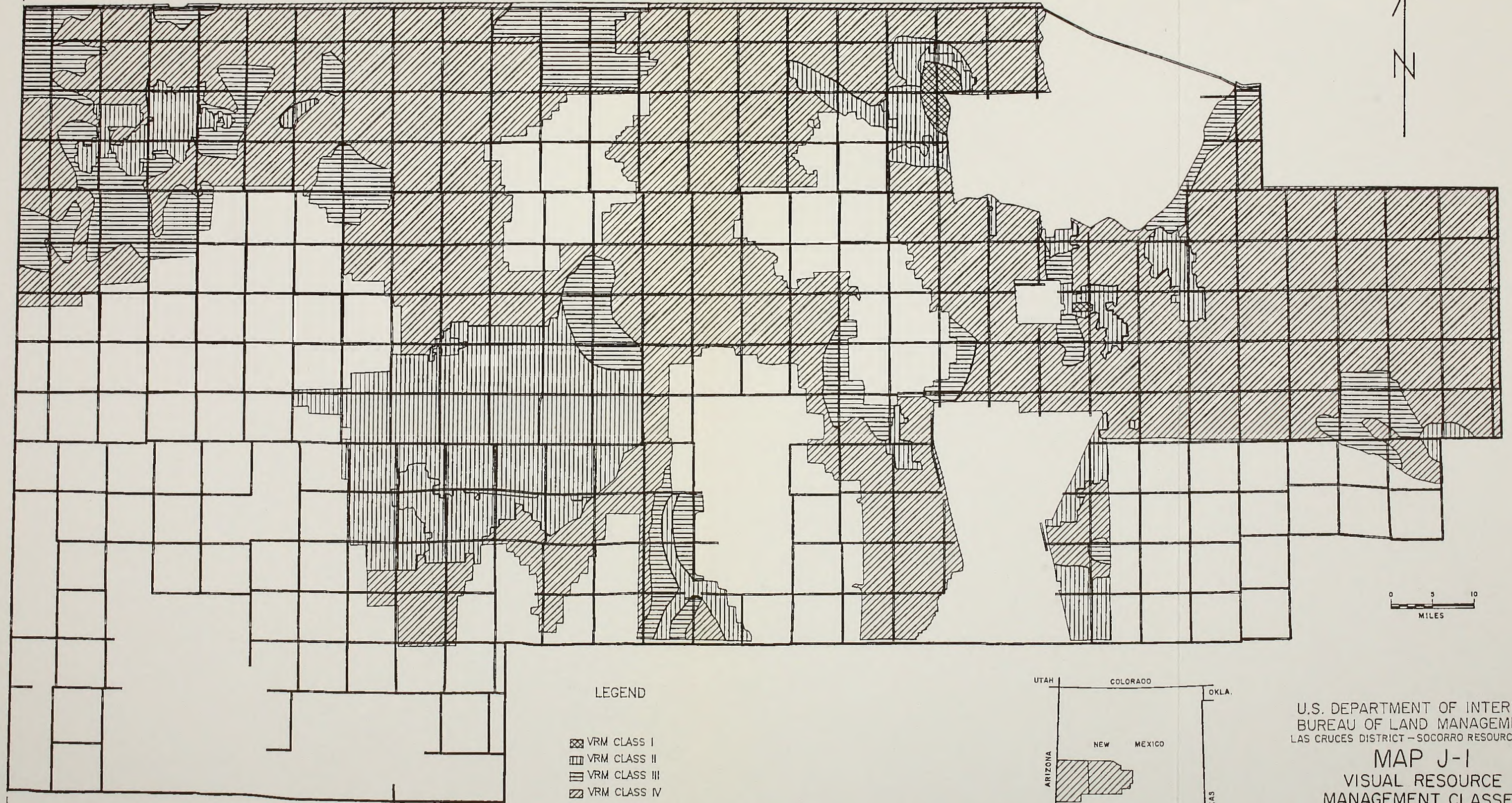
CLASS III: The objective of this class is to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. Management activities may attract attention but should not dominate the view of the casual observer. Changes should repeat the basic elements found in the predominant natural features of the characteristic landscape.

CLASS IV: The objective of this class is to provide for management activities which require major modification of the existing character of the landscape. The level of change to the characteristic landscape can be high. These management activities may dominate the view and be the major focus of viewer attention. However, every attempt should be made to minimize the impact of these activities through careful location, minimal disturbance, and repeating the basic elements.



R21W R20W R19W R18W R17W R16W R15W R14W R13W R12W R11W R10W R9W R8W R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E R9E R10E

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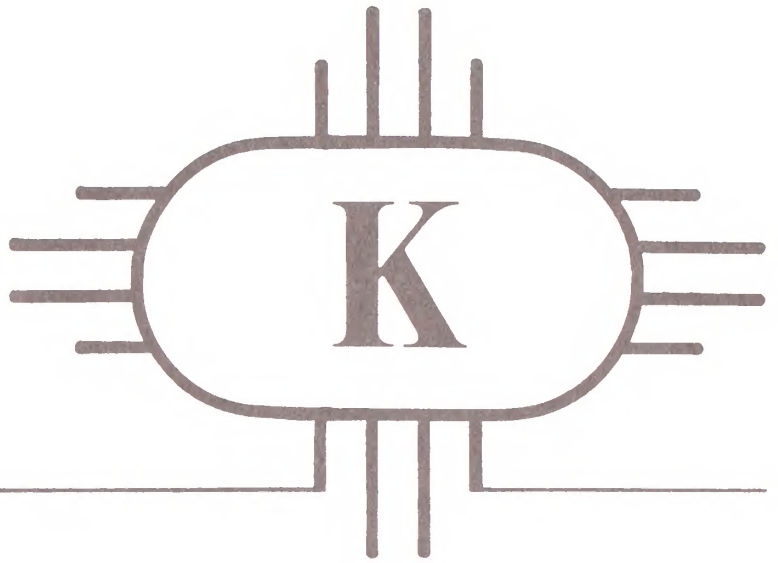


U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA  
**MAP J-1**  
VISUAL RESOURCE  
MANAGEMENT CLASSES









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Ranch Budgets

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## RANCH BUDGETS

Assumptions used in analyzing impacts to social and economic conditions in the Socorro Resource Management Plan (RMP) are listed below. Most of these assumptions relate to the vegetative use issue and particularly to factors used in ranch budgets by which potential economic impacts are analyzed. The ranch budgets prepared for the BLM Las Cruces District, White Sands Resource Area RMP were used with some adjustments for herd size. These White Sands budgets were based on data prepared in a 1982 study done by New Mexico State University and are representative of the Chupadera Mesa Area.

### Assumptions

1. Current livestock market conditions would prevail.
2. Public opinions, attitudes and concerns expressed through the scoping process are representative of residents of the area.
3. Ranch budgets describe "Typical Ranches" not any specific ranch.
4. The ranch budgets used for this assessment constitutes an economic model of ranches as a profit-maximizing enterprise and cannot completely describe any behavior that is influenced by noneconomic factors.
5. None of the alternatives would change the calf crop percentage or the average weight of animals marketed.
6. Ranch budgets were based on total herd size, not just animal units (AUs) dependent on public lands. Economic impacts were based on adjustments on BLM grazing lands as they relate to total operation.

TABLE K-1  
Livestock Inventory for Medium Commercial Cow-Calf Ranches  
Socorro Resource Area

Class	Beginning	Purchased	Born	Sold	Died	Used	Ending
<u>CATTLE</u>							
Cows Beef	210			40	2		210
Heifers 1-2	45			2	1		45
Steers 1-2	2					2	2
Heifer Calves	45*		108	58	5		45*
Steer Calves	2*		109	102	5		2*
Bulls	14	4		4			14
TOTAL CATTLE	318						318
Cattle AUs	271						271
<u>HORSES</u>							
TOTAL HORSES	3						3
Horse AUs	3						3
TOTAL AUs**	274						274

\* Not counted as BLM AUs

\*\* Average AUs 274 (AUs range from 147 to 365) - 5 operators)

Note: Average herd size 255 cows, 85 percent calf crop (calves born to exposed cows), 18 cows per bull, 4 bulls replaced each year, 5 percent calf death loss, 20 percent cow replacement, 1 percent cow death loss.

TABLE K-2  
Estimated Receipts for Medium Commercial Cow-Calf Ranches  
Socorro Resource Area

Item	Number per Ranch	Average weight (CWT)	Price per CWT	Value per Head	Receipts
Cows	40	8.00	\$36.00	\$288.00	\$11,520.00
Heifers 1-2	2	5.80	52.00	301.60	603.20
Steers 1-2	0	6.20	63.00	390.60	0
Heifers Calves	58	3.58	54.00	193.32	11,212.56
Steers Calves	102	3.98	65.00	258.70	26,387.40
Bulls	4	14.00	46.00	644.00	2,576.00
TOTAL CASH RECEIPTS					\$52,299.16
Livestock Perquisites					
Cattle Use:					
Yearling Steers	2	6.20	63.00	390.60	781.20
TOTAL RECEIPTS					\$53,080.36



TABLE K-3  
Estimated Costs for Medium Commercial Cow-Calf Ranch, Socorro Resource Area

Item	Unit	Quantity	Purchased Inputs	Fuel and Repairs	Repairs and Maintenance	Depreciation	Total
<b>FEED</b>							
Hay	Ton	39	\$ 3,322.80				\$ 3,322.80
Grain	CWT	11	65.45				65.45
Grain cubes	CWT	1,858	9,011.30				9,011.30
Protein Concentrates (41%)	CWT	235	2,937.50				2,937.50
Salt and Minerals	CWT	78	536.00				546.00
SUBTOTAL			\$15,883.05				\$15,883.05
<b>LEASES &amp; GRAZING FEES</b>							
BLM	AUMs	994	\$ 1,848.84				\$ 1,848.84
State	Acres	2,671	1,148.53				1,148.53
SUBTOTAL			\$ 2,997.37				\$ 2,997.37
<b>LIVESTOCK EXPENSE</b>							
Veterinary & Medicine	Head	321	\$ 680.00				\$ 680.00
Bulls	Head	4	6,000.00				6,000.00
SUBTOTAL			\$ 6,680.00				\$ 6,680.00
<b>LABOR (HIRED)</b>							
Monthly	Months	2	\$ 1,000.00				\$ 1,000.00
Daily	Days	4	112.00				112.00
Contract	Days	9	315.00				315.00
SUBTOTAL			\$ 1,427.00				\$ 1,427.00
<b>OTHER</b>							
Electricity	Ckn	45	\$ 440.10				\$ 440.10
Telephone	Months	12	468.00				468.00
Butane & Heating	Gallons	180	162.00				162.00
Insurance	Number	1	100.00				100.00
Miscellaneous	Head	321	2,272.68				2,272.68
Property Tax (Land)	Acres	17,305	1,903.55				1,903.55
Property Tax (Livestock)	Head	321	304.95				304.95
SUBTOTAL			\$ 5,651.28				\$ 5,651.28

TABLE K-3 (continued)  
Estimated Costs for Medium Commercial Cow-Calf Ranch, Socorro Resource Area

Item	Unit	Quantity	Purchased Inputs	Fuel and Repairs	Repairs and Maintenance	Depreciation	Total
<b>MACHINERY &amp; EQUIPMENT</b>							
Auto (Ranch Share)	Miles	9,976		\$ 1,496.40		\$ 947.72	\$ 2,444.12
Pickup	Miles	22,172		3,104.08		2,217.20	5,321.28
Other Equipment	Dollars	5,543		0		986.65	986.65
SUBTOTAL				\$ 4,600.48		\$ 4,151.57	\$ 8,752.05
<b>IMPROVEMENTS</b>							
House (Ranch Share)	Number	1			\$ 158.00	\$ 557.50	\$ 715.50
Service Buildings	Number	2			116.00	285.00	401.00
Fences	Miles	25			1,067.50	1,258.50	2,326.00
Corrals	Number	5			365.00	800.00	1,165.00
Wells	Number	4			352.00	1,200.00	1,552.00
Tanks	Number	11			231.00	880.00	1,111.00
Pipelines	Miles	6			207.00	600.00	807.00
SUBTOTAL					\$ 2,496.50	\$ 5,581.00	\$ 8,077.50
TOTAL			\$32,638.70	\$ 4,600.48	\$ 2,496.50	\$ 9,732.57	\$49,468.25

\* Estimates based on Gray et al. 1983



TABLE K-4  
Livestock Inventory for Large Commercial Cow-Calf Ranches  
Socorro Resource Area

Class	Beginning	Purchased	Born	Sold	Died	Used	Ending
<u>CATTLE</u>							
Cows Beef	733			140	7		733
Heifers 1-2	160			11	2		160
Steers 1-2	3					3	3
Heifer Calves	160*		378	199	19		160*
Steer Calves	3*		378	356	19		3*
Bulls	45	11		10	1		45
TOTAL CATTLE	1,104						1,104
Cattle AUs	941						941
<u>HORSES</u>							
TOTAL HORSES	10	1			1		10
Horse AUs	10						
TOTAL AUs**	951						951

\* Not counted as BLM AUs

\*\* Average AUs 951 - 3 operators

Note: Average herd size 893 cows, 85 percent calf crop (calves born to exposed cows), 20 cows per bull, 4 bulls replaced each year, 5 percent calf death loss, 20 percent cow replacement, 1 percent cow death loss.

TABLE K-5  
Estimated Receipts for Large Commercial Cow-Calf Ranches  
Socorro Resource Area

Item	Number per Ranch	Average weight (CWT)	Price per CWT	Value per Head	Receipts
Cows	140	8.00	\$36.00	\$288.00	\$40,320.00
Heifers 1-2	11	5.80	52.00	301.60	3,317.60
Steers 1-2	0	6.20	63.00	390.60	24,607.80
Heifers Calves	199	3.58	54.00	193.32	38,470.68
Steers Calves	356	3.98	65.00	258.70	92,097.20
Bulls	10	14.00	46.00	644.00	6,440.00
TOTAL CASH RECEIPTS					\$205,253.28
Livestock Perquisites					
Cattle Use:					
Yearling Steers	3	6.20	63.00	390.60	1,171.80
TOTAL RECEIPTS					\$206,425.08

TABLE K-6  
Estimated Costs for Large Commercial Cow-Calf Ranches, Socorro Resource Area

Item	Unit	Quantity	Purchased Inputs	Fuel and Repairs	Repairs and Maintenance	Depreciation	Total
<b>FEED</b>							
Hay	Ton	25.7	\$ 2,251.00				\$ 2,251.00
Grain	CWT	77.0	465.85				465.85
Grain cubs	CWT	6502.0	45,514.00				45,514.00
Protein Concentrates	CWT	168.3	2,155.92				2,155.92
Salt and Minerals	CWT	386.1	2,490.35				2,490.35
SUBTOTAL			<u>\$ 52,877.12</u>				<u>\$ 52,877.12</u>
<b>LEASES &amp; GRAZING FEES</b>							
BLM	AUMs *	3,837	\$ 7,136.82				\$ 7,136.82
State	Acres	7,037	2,111.10				2,111.10
SUBTOTAL			<u>\$ 9,247.92</u>				<u>\$ 9,247.92</u>
<b>LIVESTOCK EXPENSE</b>							
Veterinary & Medicine	Head	1,114	\$ 2,651.32				\$ 2,651.32
Bulls	Head	11	13,200.00				13,200.00
SUBTOTAL			<u>\$ 15,851.32</u>				<u>\$ 15,851.32</u>
<b>LABOR (HIRED)</b>							
Annual	Months	23	\$ 13,800.00				\$ 13,800.00
SUBTOTAL			<u>\$ 13,800.00</u>				<u>\$ 13,800.00</u>
<b>OTHER</b>							
Electricity	CKH	300	\$ 2,883.00				\$ 2,883.00
Telephone	Months	12	1,242.00				1,242.00
Butane & Heating	Gallons	1,322	1,295.56				1,295.56
Insurance	Numoer	1	4,430.00				4,430.00
Miscellaneous	Head	1,114	4,968.44				4,968.44
Property Tax (Land)	Acres	17,305	3,980.15				3,980.15
Property Tax (Livestock)	Head	1,114	568.14				568.14
SUBTOTAL			<u>\$19,367.29</u>				<u>\$ 19,367.29</u>



TABLE K-6 (continued)  
Estimated Costs for Large Commercial Cow-Calf Ranches, Socorro Resource Area

Item	Unit	Quantity	Purchased Inputs	Fuel and Repairs	Repairs and Maintenance	Depreciation	Total
<b>MACHINERY &amp; EQUIPMENT</b>							
Auto (Ranch Share)	Miles	9,015		\$ 1,262.10		\$ 540.90	\$ 1,803.00
Pickup	Miles	48,320		9,180.80		3,382.40	12,563.20
Trucks	Miles	5,154		2,525.46		721.56	3,247.02
Tractors	Hours	193		741.12		420.74	1,161.86
Other Equipment	Dollars	9,015		0		1,532.55	1,532.55
SUBTOTAL				\$ 13,709.48		\$ 6,598.15	\$ 20,307.63
<b>IMPROVEMENTS</b>							
House (Ranch Share)	Number	3			\$ 568.05	\$ 1,927.80	\$ 2,513.85
Service Buildings	Number	3			543.15	1,121.31	1,664.46
Fences	Miles	90			2,775.60	5,323.50	8,099.10
Corrals	Number	5			273.15	1,363.90	1,637.05
Wells	Number	7			518.56	2,216.20	2,734.76
Tanks	Number	27			745.74	3,352.05	4,097.79
Pipelines	Miles	18			249.84	999.72	1,249.56
SUBTOTAL					\$ 5,692.09	\$ 16,304.48	\$ 21,996.57
TOTAL			\$111,143.65	\$ 13,709.48	\$ 5,692.09	\$ 22,902.63	\$153,447.85

\* Estimates based on Gray et al. 1983

TABLE K-6  
Estimated Costs for Large Commercial Cow-Calf Ranches, Socorro Resource Area

Item	Unit	Quantity	Purchased Inputs	Fuel and Repairs	Repairs and Maintenance	Depreciation	Total
<b>FEED</b>							
Hay	Ton	25.7	\$ 2,251.00				\$ 2,251.00
Grain	CWT	77.0	465.85				465.85
Grain cubs	CWT	6502.0	45,514.00				45,514.00
Protein Concentrates	CWT	168.3	2,155.92				2,155.92
Salt and Minerals	CWT	386.1	2,490.35				2,490.35
SUBTOTAL			<u>\$ 52,877.12</u>				<u>\$ 52,877.12</u>
<b>LEASES &amp; GRAZING FEES</b>							
BLM	AUMs *	3,837	\$ 7,136.82				\$ 7,136.82
State	Acres	7,037	2,111.10				2,111.10
SUBTOTAL			<u>\$ 9,247.92</u>				<u>\$ 9,247.92</u>
<b>LIVESTOCK EXPENSE</b>							
Veterinary & Medicine	Head	1,114	\$ 2,651.32				\$ 2,651.32
Bulls	Head	11	13,200.00				13,200.00
SUBTOTAL			<u>\$ 15,851.32</u>				<u>\$ 15,851.32</u>
<b>LABOR (HIRED)</b>							
Annual	Months	23	\$ 13,800.00				\$ 13,800.00
SUBTOTAL			<u>\$ 13,800.00</u>				<u>\$ 13,800.00</u>
<b>OTHER</b>							
Electricity	CKH	300	\$ 2,883.00				\$ 2,883.00
Telephone	Months	12	1,242.00				1,242.00
Butane & Heating	Gallons	1,322	1,295.56				1,295.56
Insurance	Number	1	4,430.00				4,430.00
Miscellaneous	Head	1,114	4,968.44				4,968.44
Property Tax (Land)	Acres	17,305	3,980.15				3,980.15
Property Tax (Livestock)	Head	1,114	568.14				568.14
SUBTOTAL			<u>\$19,367.29</u>				<u>\$ 19,367.29</u>



TABLE K-6 (continued)  
Estimated Costs for Large Commercial Cow-Calf Ranches, Socorro Resource Area

Item	Unit	Quantity	Purchased Inputs	Fuel and Repairs	Repairs and Maintenance	Depreciation	Total
<b>MACHINERY &amp; EQUIPMENT</b>							
Auto (Ranch Share)	Miles	9,015		\$ 1,262.10		\$ 540.90	\$ 1,803.00
Pickup	Miles	48,320		9,180.80		3,382.40	12,563.20
Trucks	Miles	5,154		2,525.46		721.56	3,247.02
Tractors	Hours	193		741.12		420.74	1,161.86
Other Equipment	Dollars	9,015		0		1,532.55	1,532.55
SUBTOTAL				\$ 13,709.48		\$ 6,598.15	\$ 20,307.63
<b>IMPROVEMENTS</b>							
House (Ranch Share)	Number	3			\$ 568.05	\$ 1,927.80	\$ 2,513.85
Service Buildings	Number	3			543.15	1,121.31	1,664.46
Fences	Miles	90			2,775.60	5,323.50	8,099.10
Corrals	Number	5			273.15	1,363.90	1,637.05
Wells	Number	7			518.56	2,216.20	2,734.76
Tanks	Number	27			745.74	3,352.05	4,097.79
Pipelines	Miles	18			249.84	999.72	1,249.56
SUBTOTAL					\$ 5,692.09	\$ 16,304.48	\$ 21,996.57
TOTAL			\$111,143.65	\$ 13,709.48	\$ 5,692.09	\$ 22,902.63	\$153,447.85

\* Estimates based on Gray et al. 1983

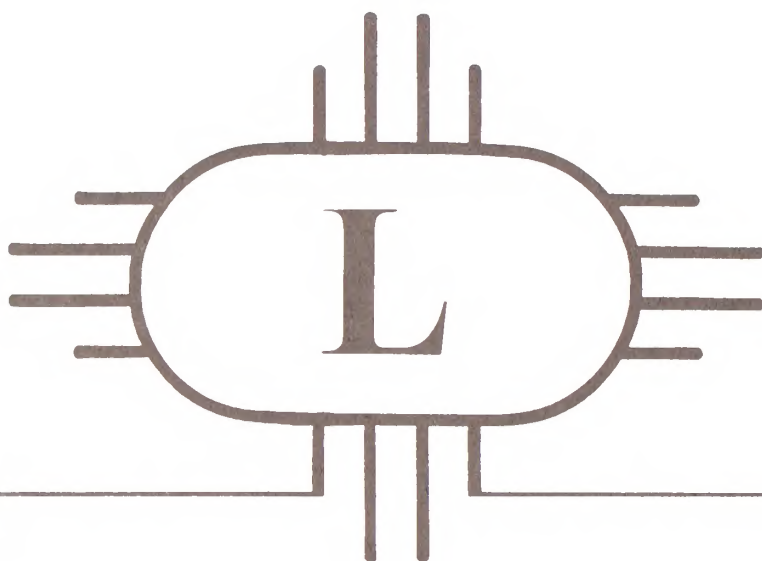
TABLE K-7

## Estimated Costs and Returns For All Ranch Operators, 1982 Dollars

	Medium Commercial Ranches	Large Commercial Ranches	Total All Ranches
Total Receipts	\$265,400	\$619,275	\$884,675
Cash Costs	198,678	391,636	590,314
Depreciation	48,663	68,708	117,371
Cash Return (to labor, management capital)	18,059	158,931	176,990

Note: It should be noted that although each individual ranch has its own characteristics and may vary significantly from other ranches, it is believed that the "typical" ranches used in this analysis adequately represent the majority of ranches in their appropriate category.





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Special Management Areas

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## SPECIAL MANAGEMENT AREAS

### INTRODUCTION

This appendix contains general descriptions of the Special Management Areas (SMA) identified in this Resource Management Plan (RMP). The proposed SMAs include previously identified areas in the existing planning documents and proposed areas requiring special management.

The narratives for each SMA include a general description, the management goals, the management prescriptions, and a location map. No maps are included for the threatened or endangered (T&E) plants and cultural resources SMAs because these sites are sensitive and could be subject to vandalism. The descriptive narratives of the SMAs vary due to the nature of the management attention each area has received. Detailed activity plans will be developed after the RMP is formally approved and will contain more specific information. The management goals and planned actions identified provide the reader with the general management emphasis the SMA will receive. It is important to note that the information described within this appendix is subject to modification during the preparation of the activity plans.

The proposed SMAs in this RMP are listed below. Please see Map 2-8 for the general locations of all the SMAs in the Socorro Resource Area (SRA). Since certain SMAs are carried forward in some alternatives and not others, the alternative(s) in which the SMA appears is listed after the name.

<u>No.</u>	<u>Name</u>	<u>Alternative</u>	<u>Program Emphasis</u>
1.	Ladron Mountain	B, C	Wildlife
2.	Pelona Mountain	B, C, A (Bat Cave CRMP area only)	Wildlife
3.	Divide Tin	B, D	Minerals
4.	Aqua Fria	B, C	Wildlife
5.	Cerro Pomo	B, C	Recreation
6.	Sawtooth	B, C	Sensitive Plants
7.	Soaptree	B, C	Sensitive Plants

8.	Horse Mountain	B, C	Wildlife
9.	Stallion	B, C	Watershed
10.	Puertecito	B, C	Watershed
11.	Fence Lake	B, C	Watershed
12.	Tinajas	A, B, C, D	Cultural
13.	Fort Craig	A, B, C, D	Cultural
14.	Continental Divide National Scenic Trail	B, C	Recreation
15.	Datil Well Campground	A, B, C, D	Recreation
16.	Walnut Canyon	B, C	Recreation
17.	The Box	B, C	Recreation
18.	Teypama	A, B, C, D	Cultural
19.	Newton Site	B, C	Cultural
20.	Playa Pueblos	B, C	Cultural
21.	Rio Salado	B, C	Cultural
22.	Town of Riley	B, C	Cultural
23.	Mogollon Pueblo	B, C	Cultural
24.	Mockingbird Gap	B, C	Cultural
25.	San Lorenzo Canyon	B, C	Recreation
26.	San Pedro	B, C	Sensitive Plants
27.	Iron Mine Ridge	B, C	Sensitive Plants
28.	Taylor Canyon	B, C	Sensitive Plants
29.	Harvey Plot	B, C	Rangeland
30.	Zuni Salt Lake	B, C	Cultural

### Areas of Critical Environmental Concern

#### Designations

Areas of Critical Environmental Concern (ACEC) are defined in the Federal Land Policy and Management Act (FLPMA) as ". . . areas within the public lands where special management attention is required (when such areas are developed or used or where no development is required) to protect and prevent irreparable damage to important historic, cultural, or scenic values, fish and wildlife resources or other natural system or processes, or to protect life and safety from natural hazards." The regulations require that areas of potential ACECs must meet both of the following criteria:

1) Relevance: There shall be present a significant historic, cultural, or scenic value; a fish or wildlife resource or other natural system or process; or natural hazard.

2) Important: The above described value, resource, system, process, or hazards shall have substantial significance and values. This generally requires qualities of more than local significance and special worth, consequence, meaning, distinctiveness, or cause of concern. A natural hazard can be important if it is a significant threat to human life or property.

ACEC designation was considered and evaluated in Alternative C for most areas identified as potential SMAs. Where BLM determined that the ACEC criteria for relevance and importance was met, these areas have been proposed for designation in the preferred alternative.

#### SMA PRESCRIPTION DEFINITIONS

1. Restrict authorization for rights-of-way (ROWS) and leases: pertains to restricting the size and the type of new ROW and lease authorization within specific areas. Restrictions may vary depending upon management objectives of the specific SMA.
2. Exclude authorization for ROWs and leases: pertains to excluding all new ROWs and leases.
3. Limit fire suppression: pertains to limiting fire suppression to initial attack procedures excluding the use of heavy equipment and aerial tankers.
4. Restrict mineral material disposals: pertains to restricting the amount and location for sales and free-use permits of gravel, sand, and other common variety minerals in specific areas such that these sales will be nonimpairing to the major resources being managed for in those areas.
5. Restrict geophysical operations: pertains to restricting geophysical exploration activities to nonvehicular methods such as foot travel or use by helicopter.

6. Exclude vegetative material sales: pertains to excluding or closing a specific area to the sale of living plants, specifically yuccas.

7. Designate grazing allotments in "M" category: pertains to designating allotments within certain watershed areas in "M" or maintain range vegetative class condition for an absolute minimum and provides for enhanced management opportunities.

8. Fluid leasing stipulations (see Appendix B for complete definitions)

No. 1 Surface disturbing activities will be allowed only when specifically approved in writing by the authorized officer to ensure protection of all significant resource values.

No. 2 Surface disturbing activities will be allowed only during specified time periods.

No. 3 No surface occupancy will be allowed.

No. 4 Surface use or occupancy will be strictly controlled in these areas to mitigate special values, special purposes or areas that require special attention. Use or occupancy will be authorized only when it has been demonstrated that the area is essential for operations. The lessee/operator may be required to submit a surface use and operations plan to the BLM for the purpose of mitigating these special concerns.

9. Limited or closed to motor vehicle use - see Glossary for off-road vehicle (ORV) definitions.

10. Acquire nonpublic lands - BLM will entertain proposals from the State and from private landowners and will also introduce its own proposals to acquire these identified parcels. However, all land ownership adjustments will be strictly voluntary and done in close coordination with the parties involved.



## 1. LADRON MOUNTAIN

General Description: The Ladron Mountain proposed SMA, located in the north-central portion of Socorro County, is situated approximately 15 air miles northwest of the community of Socorro, New Mexico. The proposed SMA covers approximately 52,220 acres of public land, with 10,240 acres of private and State lands intermingled within its boundaries. The Sierra Ladrones (Mountain of Thieves) Wilderness Study Area (WSA) is almost totally encompassed by the proposed SMA, and is presently recommended as suitable for wilderness designation.

Ladron Mountain is bordered by the Sevilleta National Wildlife Refuge to the southeast which, together with Ladron Mountain, possesses habitat for approximately 200 wildlife species. The area has a high potential for the reintroduction of desert bighorn sheep, a New Mexico State endangered species. The habitat, which is so conducive to the success of a bighorn sheep transplant, is truly characteristic of rugged southwest desert mountains.

The jagged peaks of the Sierra Ladrones pose a prominent landmark as they rise from the Rio Grande Valley from approximately 5,200 feet to an elevation of 9,176 feet. The sharp relief, characterized by rocky cliffs, mesa rimrock, badlands, and steep slopes cut by numerous canyons and ravines, is accented by vegetative variations from the mesa grasslands to the pinyon-juniper woodlands, to the ponderosa, aspen, and Douglas fir coniferous woodlands near the summit. This rough topography coupled with extreme vegetative diversity make the Sierra Ladrones critical for the protection of raptor wintering and nesting habitat, and for dwindling mule deer populations.

The Ladron's vast geological diversity, which contains the northernmost known exposures of lower Mississippi rocks in New Mexico, is of special interest to those wanting to become familiar with the lithology and paleontology of the Mississippian geologic era. These

geologic and paleontologic features coupled with its outstanding visual qualities make the proposed SMA quite appealing for a variety of recreational activities including hiking, horseback riding, backpacking, technical rock climbing, natural history activities, environmental exploration, rock hounding, hunting, and photography to mention a few.

The Sierra Ladrones are unusually rich in cultural resources, both historic and prehistoric. Apparently both Navajo and Apache bands used the mountain as a stronghold to raid Spanish, Mexican, and American settlements along the Rio Grande. Although data is somewhat scarce, it is believed that prehistoric cultural resources of Ladron Mountain are more significant, especially from a scientific standpoint, than are its historic resources.

The Ladron Mountain SMA also contains habitat for rare and endemic plant species. These species include threadleaf false carrot (Aletes filifolia), planks catchfly (Silene plankii), and Wrights spider lily (Tradescantia wrightii). They are listed as State sensitive species. The areas within the Ladron Mountain SMA where habitat for the above plants occur were nominated by the Nature Conservancy and the New Mexico Department of Natural Resources (NMDNR) for special management because of the sensitivity of these plants.

Management Goals: Ladron Mountain SMA will be managed to protect the area identified as habitat for the State endangered Desert Bighorn Sheep; protect deer and raptor wintering and nesting habitats; and protect the geologic, recreational, paleontological and scenic values. Management of the Ladron Mountain SMA will emphasize wildlife habitat uses and protect the geologic, recreational and scenic values as the highest priority over the other resource uses when considering proposed actions with the SMA.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

Alternative B  
62,460 Acres

1. Close to domestic sheep and goat grazing.
2. Limit motor vehicle use to existing roads and trails.
3. Restrict authorization for ROWs and leases.
4. Limit fire suppression.
5. Close to woodcutting.
6. Restrict mineral material disposals.
7. Close certain vehicle trails 18 miles.
8. Acquire nonpublic lands.
9. Fluid Leasing Stipulations Nos. 1 & 2.
10. Designate as an ACEC.
11. Restrict geophysical operations.
12. Close only allotment No. 1152 to grazing.
13. Reintroduce Desert Bighorn Sheep.

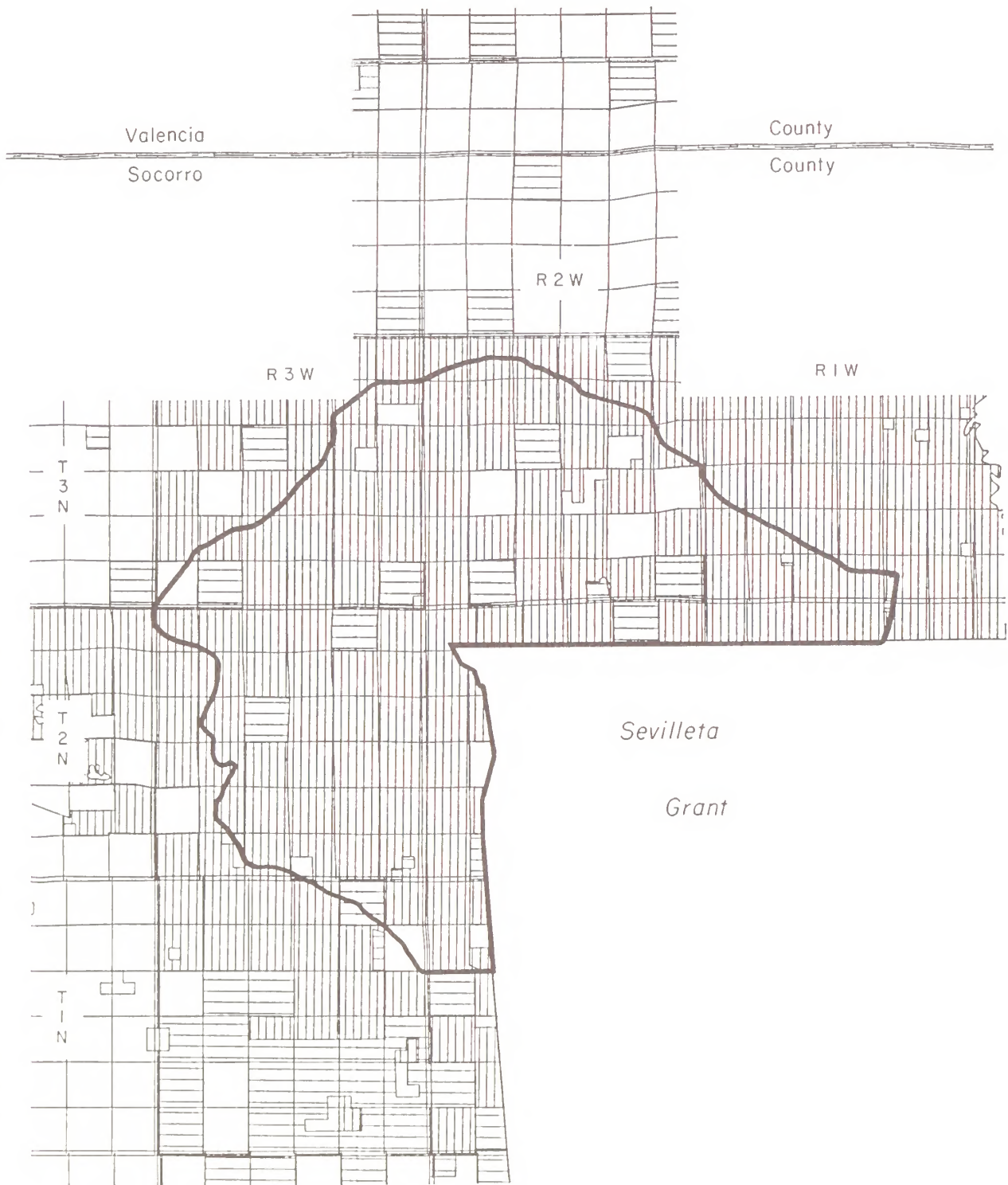
Alternative C  
62,460 Acres

1. Close to domestic sheep & goat grazing entire area.
2. Close to motor vehicle use.
3. Exclude authorization for ROWs and leases.
4. Limit fire suppression.
5. Close to woodcutting.
6. Exclude mineral material disposals.
7. Withdraw 5,920 acres from locatable mineral entry - two areas.
8. Acquire nonpublic lands.
9. Fluid Leasing Stipulation No. 3.
10. Designate as an ACEC.
11. Restrict geophysical operations.
12. Close allotment No. 1152 to grazing.
13. Reintroduce Desert Bighorn Sheep.





Alternative D

1. Not identified as an SMA.





#### LEGEND

-  PUBLIC LAND
-  STATE LAND
-  PRIVATE LAND
-  SMA BOUNDARY

U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

LADRON  
SPECIAL MANAGEMENT AREA



## 2. PELONA MOUNTAIN

General Description: The Pelona Mountain SMA is located in Catron County, at the southwest edge of the Plains of San Augustine, approximately 29 air miles southwest of Datil. The SMA contains 78,320 acres of which 56,880 are public, 9,960 are State, and 11,480 are private. Pelona Mountain SMA varies in elevation from 6,780 feet up to 9,212 feet. The majority of the SMA is characterized by rugged canyons and rough hilly to mountainous country.

The major vegetative associations include ponderosa pine mountains, pinyon-juniper hills, half-shrub hills, rabbitbrush-grama hills, and saltbrush-grama valleys.

There are 309 potentially-occurring wildlife species on Pelona Mountain. Game species include mule deer, elk, pronghorn antelope, mountain lions, black bears, and turkey. Other species include bobcats, coyotes, gray fox, porcupines, jackrabbits, cottontails, squirrels, chipmunks, raptors, and various species of songbirds, reptiles and amphibians. The SMA has also been identified by the U.S. Fish and Wildlife Service (FWS) as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all are Federally endangered species. Wintering bald eagles are known to utilize portions of the SMA.

Currently, forage availability is not a limiting factor. Much of the SMA is in good condition, and has adequate forage available for wildlife; however, some areas do have considerable potential for improvement.

The Pelona Mountain SMA is a rugged landscape which exhibits the diversity of color, vegetation, relief, shape, and geology characteristic of pine-forested mountains. Numerous vantage points exist along ridges and other high points within the SMA offer spectacular vistas. Views from the 1,200-foot escarpment along the western edge of the SMA extend across the Plains of San Augustine and encompass much of west-central New Mexico.

The western portion of the Continental Divide WSA (WSA-NM-020-044) is located within the Pelona Mountain SMA. This portion has been recommended as "suitable" for wilderness designation and is currently being managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (USDI, BLM, as amended, 1983). This management will continue until Congress decides for or against wilderness designation on this area.

Recreation uses in this SMA include scenic sightseeing, big game hunting, backpacking, and hiking; however, the area offers a high potential for camping trips, and nature photography and study also.

The Continental Divide crosses the Pelona Mountain SMA and presently attracts a few hikers following the route of the Continental Divide. Should the Continental Divide National Scenic Trail (CDNST) actually be designated and routed through the SMA, use would undoubtedly increase.

Bat Cave, a highly significant archaeological site which is within the Pelona Mountain SMA, is on the National Register of Historic Places. Earlier people living in the cave on the shores of the extinct Lake Augustine developed what is believed by some to be the earliest domesticated maize in North America.

Management Goals: Pelona SMA will be managed to protect elk, deer and raptor wintering and nesting habitats; the geologic, recreational and scenic values; and Bat Cave Cultural Site. Management will emphasize wildlife habitat uses and protect the geologic, recreational and scenic values as the highest priority over the other resource uses when considering proposed actions within the SMA.

### Planned Actions:

#### Alternative A

1. Manage Bat Cave under existing cultural resource management plan (CRMP).



Alternative B

78,320 Acres

1. Close to domestic sheep and goats.
2. Limit motor vehicle use to existing roads & trails.
3. Close to wood cutting.
4. Acquire nonpublic lands.
5. Acquire legal access.
6. Implement Fire Management Plan.
7. Fluid Leasing Stipulations Nos. 1 & 2.
8. Restrict geophysical operations.
9. Restrict authorization for ROWs and leases.
10. Develop AMPs on all allotments.
11. Develop Bat Cave Cultural Site.
12. Close certain vehicle trails 5 miles.

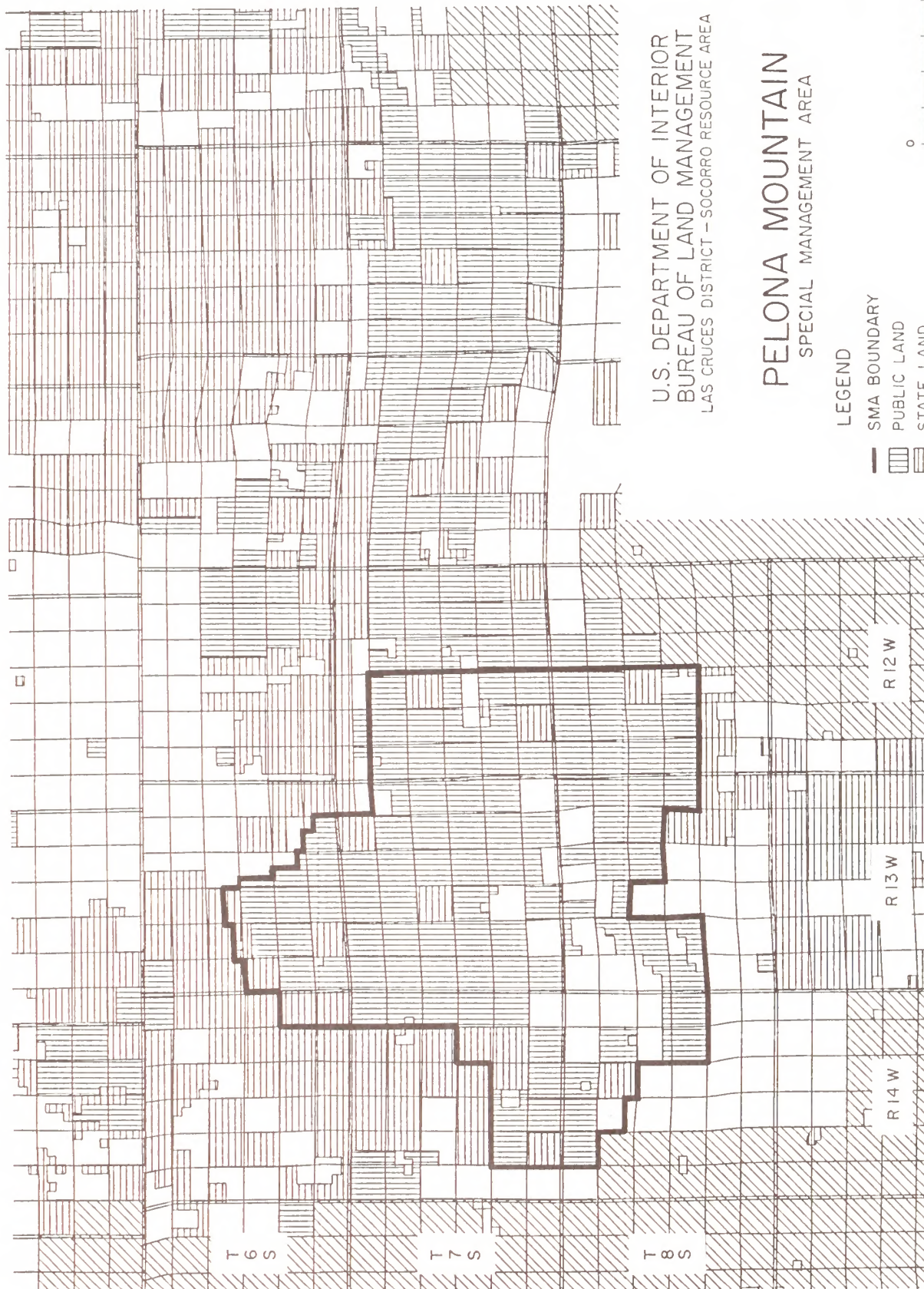
Alternative C

78,320 Acres

1. Close to domestic sheep and goats.
2. Close to motor vehicle use.
3. Close to wood cutting.
4. Acquire nonpublic lands.
5. Acquire legal access.
6. Implement Fire Management Plan.
7. Close to fluid leasing.
8. Exclude geophysical operations.
9. Exclude authorization of ROWs, permits and leases.
10. Develop allotment management plans (AMPs) on all allotments.
11. Develop Bat Cave Cultural Site.
12. Designate as an ACEC.

Alternative D

1. Not identified as an SMA.
2. Manage Bat Cave under the existing CRMP.



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

## PELONA MOUNTAIN SPECIAL MANAGEMENT AREA

### LEGEND

- SMA BOUNDARY
- ▨ PUBLIC LAND
- ▤ STATE LAND
- ▧ PRIVATE LAND
- ▩ FOREST SERVICE LAND





### 3. DIVIDE TIN

General Description: The Divide Tin SMA is located in west-central New Mexico in Catron County. It is located south of the Plains of San Augustine, about 29 air miles southwest of Datil. The SMA derives its name from the fact that the area is crossed by the Continental Divide.

The SMA includes 62,130 acres of Federal, State, and private lands (see Table L-1). This figure includes 39,800 acres of State and private surface and/or mineral lands that have been proposed to be acquired by BLM dependent upon future interests in the area.

TABLE L-1  
LAND STATUS, DIVIDE TIN SMA

	Acres
Federal Surface and Minerals	21,210
Federal Surface Only (No Minerals)	640
Private Surface/Federal Minerals	4,120
State Surface/Federal Minerals	480
State surface and Minerals	11,280
Private Surface and Minerals	24,400
TOTAL	62,130

The Divide Tin SMA is located within the eastern portion of the Continental Divide WSA (WSA-NM-020-044) which is currently being managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM, as Amended, 1983).

The main purpose of this SMA is to facilitate mining development of tin and other critical and strategic minerals that have potential for occurring in the area. After the mining, additional benefits could be obtained from the area for recreation, wildlife, and grazing resources. This SMA will also help consolidate Federal land holdings in the area.

This SMA contains a low to moderately favorable environment for tin deposits. If economic conditions encourage the exploration and development of known tin deposits within the Taylor Creek mining district just south of this SMA, adjacent areas such as this SMA would receive more attention. The possibility

exists that a large, low-grade tin deposit could be developed. This is listed as a critical and strategic mineral for the United States.

To date, no economic mineral deposits have been identified within the SMA. The geologic environment has known potential for tin deposits. The northernmost extent of identified, significant tin mineralization is along Squaw Creek (approximately 12 miles southeast of Pelona Mountain). Unusually high tin values have been reported in a stream sediment sample collected about 6 miles east of Pelona Mountain, within 2 miles of the SMA's boundary, and from a stream whose origin is within the SMA.

In addition to tin, deposits of other lithophillic elements may be present, such as molybdenum, tungsten, and beryllium. Recent investigators have postulated that the disseminated tin deposits of southeastern Catron County are surficial expressions of large molybdenum porphyry deposits. These elements are listed as critical and strategic materials for the United States.

Management Goals: Divide Tin SMA will be managed to designate the area as a "strategic and critical mineral area" and develop an Activity Plan for the management of these significant resources.

#### Planned Actions:

##### Alternative A

1. Not identified as an SMA.

##### Alternative B

62,130 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Acquire nonpublic lands.
3. Acquire legal access.

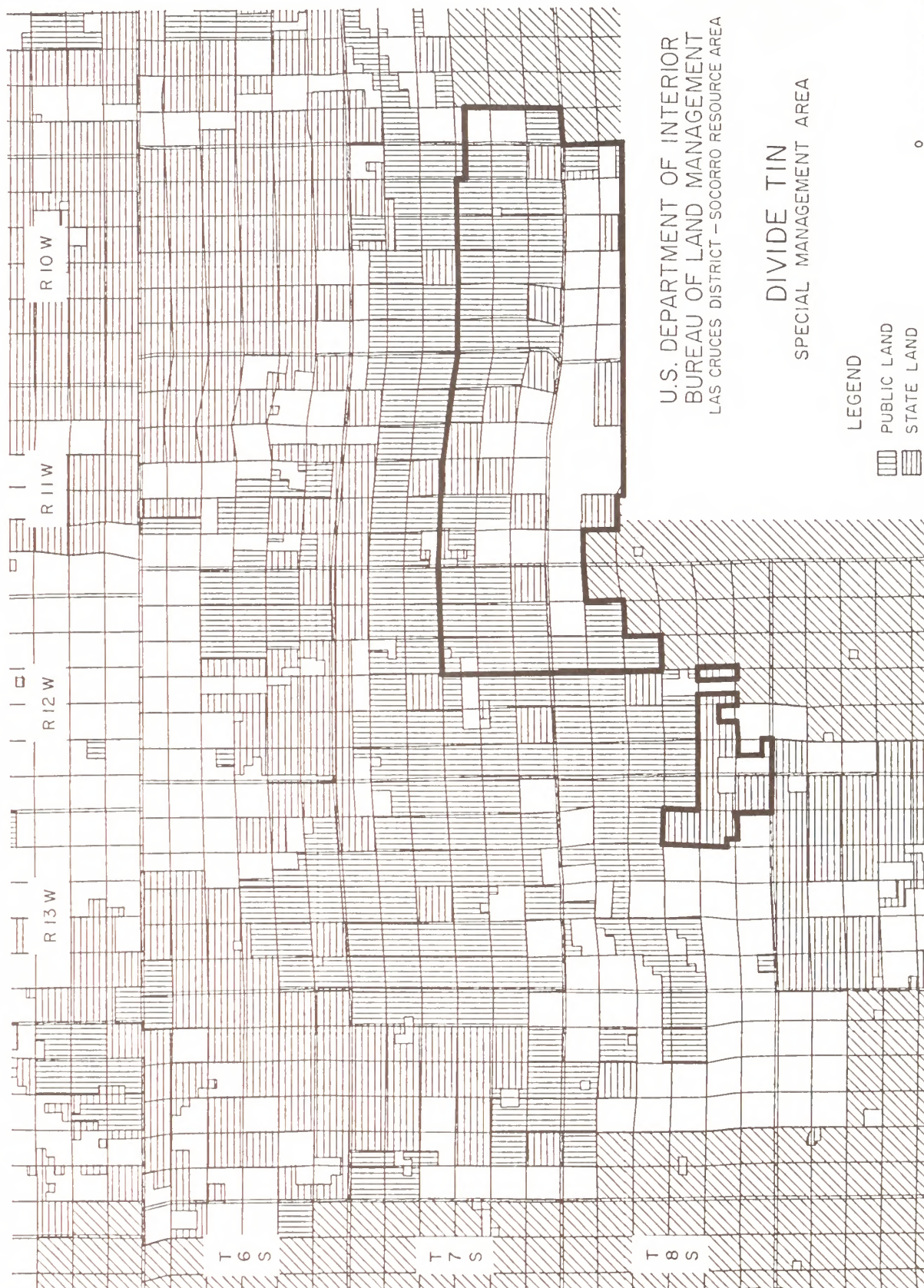
##### Alternative C

1. Not identified as SMA.

##### Alternative D

62,130 Acres

1. Open to motor vehicle use.
2. Acquire nonpublic lands.
3. Acquire legal access.



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

# DIVIDE TIN SPECIAL MANAGEMENT AREA

## LEGEND

-  PUBLIC LAND
-  STATE LAND
-  PRIVATE LAND
-  FOREST SERVICE LAND
-  SMA BOUNDARY



#### 4. AQUA FRIA

General Description: The Aqua Fria SMA is located in Catron County approximately 4 miles north of US Highway 60 and 20 air miles west of Quemado. The SMA contains 10,770 acres of which 10,170 are public lands, 80 acres are State lands, and 520 acres are private lands.

Aqua Fria SMA varies in elevation from 6,400 feet up to 7,600 feet. The majority of the SMA is characterized as an area of mesas and open grasslands enhanced by volcanic features and vertical sandstone cliffs.

The major vegetation associations include pinyon-juniper hills, Russian thistle-alkali sacaton valleys, and blue-grama-snakeweed hills.

There are 306 potentially occurring wildlife species in the Aqua Fria SMA. Game species include mule deer, pronghorn, turkey, and an occasional elk. Other species include cottontails, jackrabbits, coyotes, kit fox, bobcats, porcupines, skunks, red-tailed hawks, prairie falcons, golden eagles, and various species of songbirds, reptiles, and amphibians. The SMA has also been identified by the FWS as providing potential habitat for bald eagles, peregrine falcons, and black-footed ferrets. Wintering bald eagles are known to utilize this SMA.

Aqua Fria Canyon and the associated rimrocks and cliffs provide habitat for a great number of raptor species including golden eagles and prairie falcons. The canyon bottom provides the foraging/hunting areas and the rimrock and cliffs provide the nesting sites for these raptor species.

The Aqua Fria SMA is a long-wide grass covered valley bottom bordered with vertical basalt and sandstone cliffs. The area exhibits the diversity of color, vegetation, relief, shape and geology characteristic of desert woodlands. Numerous panoramas and vistas exist throughout the SMA, providing unique visual resources.

Portions of the Eagle Peak (WSA-NM-020-019) and Mesita Blanca (WSA-NM-020-018) WSAs are located within the Aqua Fria SMA. Both of these WSAs have been recommended as "unsuitable" for wilderness designation. However, these WSAs will continue to be managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (USDI, BLM, as amended, 1983) until Congress decides for or against wilderness designation on these areas.

Recreation uses in this SMA include backpacking, hiking, camping, photography, big game hunting, rock hounding, sightseeing, and exploring.

The Aqua Fria SMA contains a large number of archaeological sites ranging from petroglyphs, to campsites, to villages. These sites represent human habitation from the Archaic period (6,000 BC to Christian Era) to the homesteading era.

The cultural resources and volcanic features present in the SMA offer opportunities for archaeological and geologic research.

Also, opportunities for environmental education exist based on the wildlife, vegetation, geology, and cultural resources present in the SMA.

Management Goals: Agua Fria SMA will be managed to protect raptor wintering and nesting habitats; and the geologic and scenic values. Management will emphasize wildlife habitat uses and protect the geologic and scenic values as the highest priority over the other resource uses when considering proposed actions within the SMA.

#### Planned Actions:

##### Alternative A

1. Not identified as an SMA.

##### Alternative B

10,770 Acres

1. Limit motor vehicle use to existing roads and trails.

2. Restrict authorization for ROWs and leases.
3. Close to woodcutting.
4. Restrict mineral material disposals.
5. Acquire nonpublic lands.
- 6 Fluid Leasing Stipulation No. 2.

Alternative C

10,770 Acres

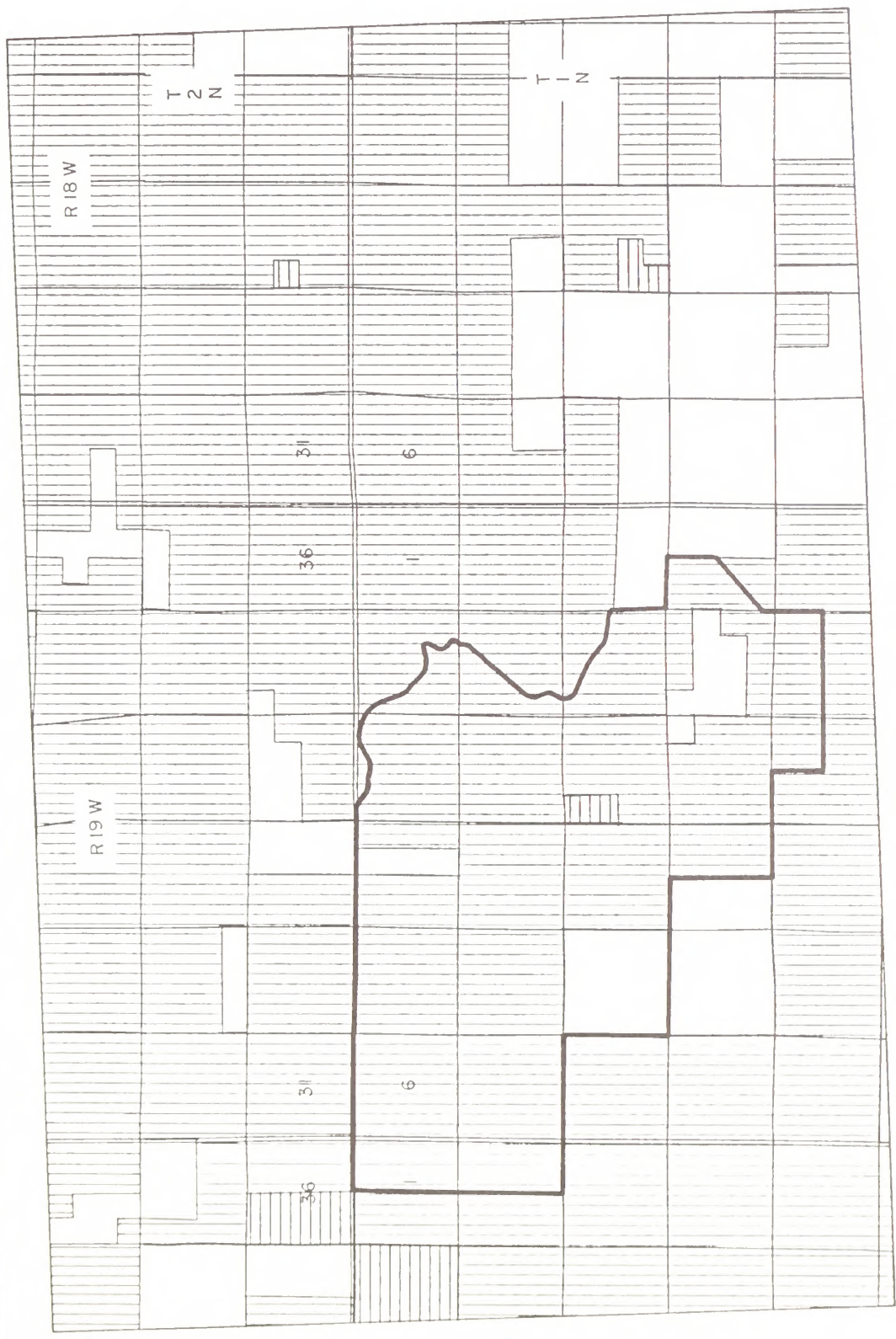
1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.

3. Close to woodcutting.
4. Exclude mineral material disposals.
5. Acquire nonpublic lands.
6. Fluid Leasing Stipulation No. 3.
7. Withdraw 4,940 acres from locatable mineral entry.
8. Restrict geophysical operations.
9. Designate as an ACEC.

Alternative D

1. Not identified as an SMA.





U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

AGUA FRIA  
SPECIAL MANAGEMENT AREA

- LEGEND
- PUBLIC LAND
  - STATE LAND
  - PRIVATE LAND
  - SMA BOUNDARY



## 5. CERRO POMO

General Description: This proposed SMA currently receives little intensive management. The SMA is located within the southwest portion of the Eagle Peak WSA and encompasses approximately 8,840 acres. The scenic Cerro Pomo Cone and Lava Flow is located in the northern portion of the SMA. The habitat is a combination of pinyon-juniper hills and rolling grasslands. Lower elevation bottomlands include Russian thistle and alkali sacaton.

Vegetation in the SMA includes pinyon-juniper, blue grama, mountain mahogany, oak, rubber rabbitbush, fringed sage, winterfat, bottlebrush squirreltail, broom snakeweed, galleta, Apache-plume, and annual forbs.

Wildlife in the area is quite diverse, corresponding to the vegetation and land forms. Common animals within the SMA include mule deer, coyotes, cottontail, black-tailed jackrabbits, striped skunks, kit-foxes, pronghorn deer, wintering bald eagles, golden eagles, red-tailed hawks, various resident and migratory birds, and numerous reptile and amphibian species. The SMA also provides potential habitat for bald eagles, peregrine falcons, and black-footed ferrets; all Federal endangered species.

The Cerro Pomo Pueblo ruin is a late Reserve Phase/early Tularosa phase (Pueblo II/Pueblo III; ca. A.D. 1150 +) village site with two large kiva depressions. Extensive middens at the site have been vandalized, but the site holds potential for contributing to knowledge of the prehistory of the region, lying chronologically, after "Mogollon Pueblo," and before regional abandonment.

Management Goals: Management objectives for Cerro Pomo SMA will vary, depending on the outcome of possible wilderness designation.

The primary objectives will be to improve recreation opportunities, improve wildlife habitat, and protect cultural and geological resources. Management will emphasize protection of archaeological sites and geologic, recreational, and scenic values as the highest priority over the other resource uses when considering proposed actions within the SMA.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

8,840 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Close to woodcutting.
4. Restrict mineral material disposals.
5. Acquire nonpublic lands.
6. Fluid Leasing Stipulation No. 4.
7. Develop Cerro Pomo cultural site.

#### Alternative C

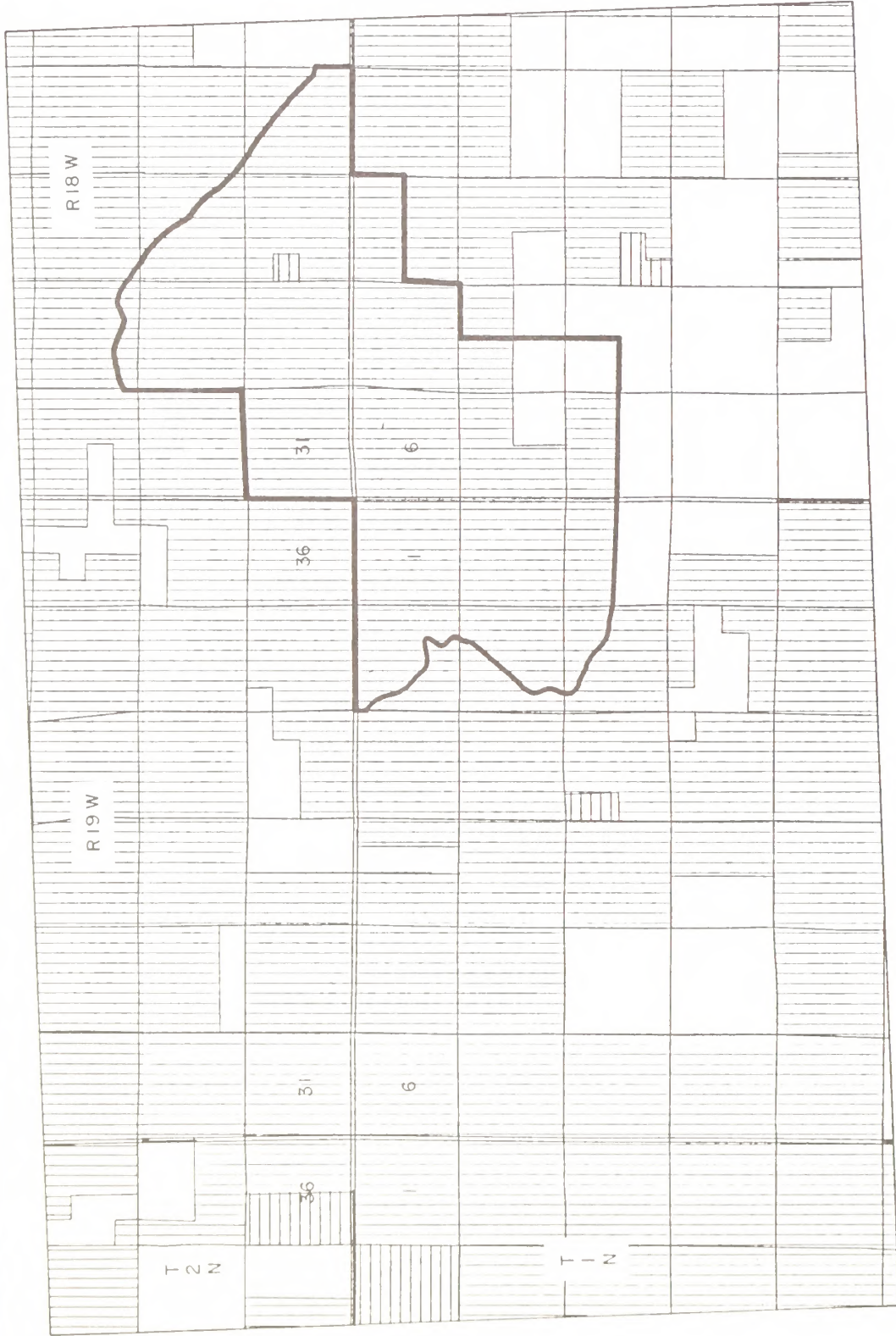
8,840 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Close to woodcutting.
4. Exclude mineral material disposals.
5. Acquire nonpublic lands.
6. Fluid Leasing Stipulation No. 1.
7. Develop Cerro Pomo Cultural Site.
8. Exclude geophysical operations.
9. Acquire mineral estate 2,000 acres.
10. Withdraw 6,800 acres from locatable mineral entry.
11. Designate as an ACEC.

#### Alternative D

1. Not identified as an SMA.





# LEGEND

- PUBLIC LAND
- STATE LAND
- PRIVATE LAND
- SMA BOUNDARY

U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

CERRO POMO  
SPECIAL MANAGEMENT AREA



## 6. SAWTOOTH

General Description: The Sawtooth SMA is located northwest of Datil, New Mexico. The area is characterized by steep ridges and footslopes.

The soils composing the plant habitat are of highly erodable sandstone and clay, usually in association with the Baca formation. Pinyon-juniper is the dominant vegetation aspect. Other vegetation common to the area include: broom snakeweed, rabbitbrush, blue grama, bottlebrush squirreltail, and galleta.

Sawtooth contains approximately 120 acres, part of which is habitat to a small population of Erigeron rhizomatous (Rhizome fleabane). This species is listed by the FWS as a threatened plant, under the Endangered Species Act (ESA) of 1973.

The area was nominated for special management because of the sensitivity of the species. This mutual concern is shared by both the New Mexico Natural Resources Department and the Nature Conservancy. Activities that could jeopardize the plant and its habitat include, intensive livestock or recreational use and fire. These concerns help establish the importance and significance of this area and its designation as an ACEC.

Management Goals: Sawtooth SMA will be managed to protect the habitat of T&E plants.

### Planned Actions

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

120 Acres

1. Withdraw from locatable mineral entry.
2. Fluid Leasing Stipulation No. 3.
3. Limit motor vehicle use to existing roads and trails.
4. Exclude authorization for ROWs and leases.
5. Acquire legal access.
6. Initiate monitoring studies.
7. Designate as an ACEC.
8. Develop AMP.
9. Designate as fire suppression area.

#### Alternative C

120 Acres

1. Withdraw from locatable mineral entry.
2. Fluid Leasing Stipulation No. 3
3. Close to motor vehicle use.
4. Exclude authorization for ROWs and leases.
5. Acquire legal access.
6. Initiate monitoring studies.
7. Designate as an ACEC.
8. Develop AMP.
9. Designate as fire suppression area.

#### Alternative D

1. Not identified as an SMA.



## 7. SOAPTREE

General Description: The Soaptree SMA contains approximately 1,200 acres, and is located 27 miles southeast of San Antonio, New Mexico. The SMA occurs on gently sloping or undulating slopes or plains. The vegetation aspect is yucca. Other species occurring in the area include ephedra, sand sagebrush, winterfat, broom snakeweed, black grama, sand dropseed, bush muhly, and threeawns.

The area was nominated as an SMA because of the aesthetic and recreational values it possesses. The SMA lies just north of the Jornada del Muerto WSA. Large, dense stands of yucca dominate the desert scenery. Although yucca stands appear in other parts of the SRA, they do not appear at the size and density that they do in this area.

With the increasing demand for yucca for landscape purposes, it becomes necessary to monitor and conserve areas for future use by the public.

Management Goals: Soaptree SMA will primarily be managed for grazing use and to protect the

unique, natural and scenic soaptree yucca type ecosystem.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

1,200 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 4.
4. Exclude vegetative material sales.
5. Restrict mineral material disposals.

#### Alternative C

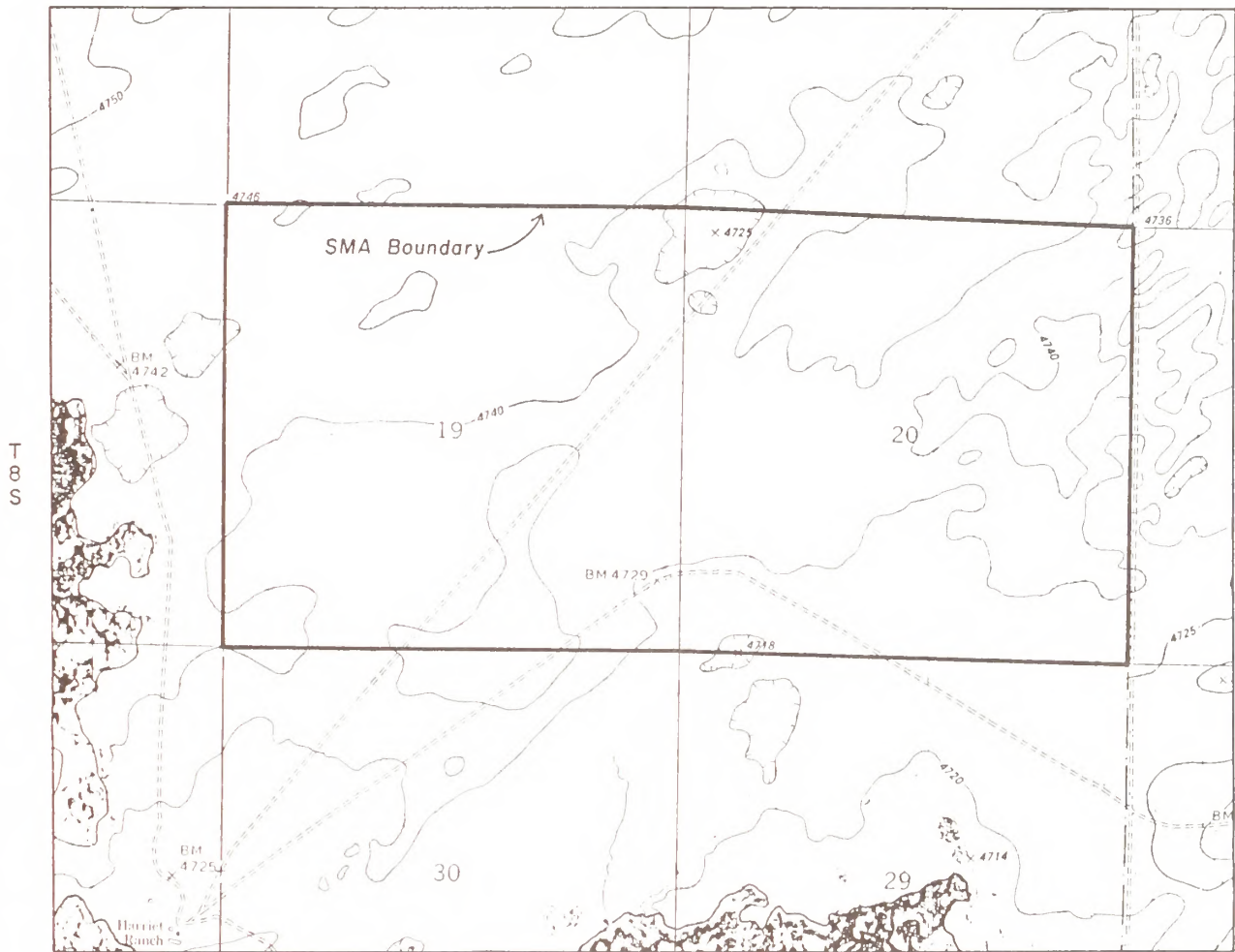
1,200 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Exclude vegetative material sales.
5. Exclude mineral material disposals.
6. Designate as an ACEC

#### ALTERNATIVE D

1. Not identified as an SMA.

R 2 E



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

SOAPTREE  
SPECIAL MANAGEMENT AREA





## 8. HORSE MOUNTAIN

General Description: The Horse Mountain SMA is located in Catron County, at the northwest edge of the western end of the Plains of San Augustine, approximately 25 air miles west-southwest of Datil. The SMA contains 7,720 acres of which 5,120 are public and 2,600 are State.

Horse Mountain SMA varies in elevation from 7,650 feet up to 9,490 feet. The majority of the SMA is characterized by rugged canyons and rough mountainous country.

The major vegetative associations include ponderosa pine mountains, pinyon-juniper hills and blue grama-snakeweed hills.

There are 299 potentially occurring wildlife species on Horse Mountain. Game species include mule deer, elk, pronghorn antelope, mountain lions, black bears, and turkey. Other species include bobcats, coyotes, gray fox, porcupines, jackrabbits, cottontails, squirrels, chipmunks, raptors, and various species of songbirds, reptiles, and amphibians. This SMA has also been identified by the FWS as providing potential habitat for bald eagles and peregrine falcons, both Federally-endangered species. Several species of raptors are known to utilize this SMA.

Much of the SMA is rarely grazed by livestock due primarily to the lack of permanent water and inaccessibility of the area. Forage availability for wildlife is not a limiting factor. Much of the SMA is in good condition, and has adequate forage available for wildlife; however, some areas do have considerable potential for improvement.

The Horse Mountain SMA is an isolated mountainous area and the view from the summit offers a spectacular 360 degree panorama. There are also isolated outcrops of volcanic rock which provide localized areas of geologic interest. Opportunities for recreation consist of big game hunting, various kinds of sightseeing, photography, hiking, camping, and backpacking.

The Horse Mountain WSA (NM-020-043) is located within the Horse Mountain SMA. The majority

of this WSA has been recommended as "suitable" for wilderness designation and is currently being managed under the Interim Management Policy and Guidelines for Lands under Wilderness Review (USDI, BLM, as Amended, 1983). This management will continue until Congress decides for or against wilderness designation on this area.

Management Goals: Horse Mountain SMA will be managed to protect elk, deer and raptor wintering and nesting habitats; the geologic, primitive recreational and scenic values as the highest priority over the other resource uses when considering proposed actions within the SMA.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

##### 7,720 Acres

1. Close to domestic sheep and goat grazing.
2. Limit motor vehicle use to existing roads and trails.
3. Restrict authorization for ROWs and leases.
4. Implement fire management plan.
5. Close to woodcutting.
6. Restrict mineral material disposals.
7. Close certain vehicle trails-2 miles.
8. Acquire nonpublic lands.
9. Fluid Leasing Stipulations Nos. 1 & 2.
10. Restrict geophysical operations.

#### Alternative C

##### 7,720 Acres

1. Close to domestic sheep & goat grazing.
2. Close to motor vehicle use.
3. Exclude authorization for ROWs and leases.
4. Implement fire management plan.
5. Close to woodcutting.
6. Exclude mineral material disposals.
7. Withdraw 5,120 acres from locatable mineral entry.
8. Acquire nonpublic lands.
9. Close to fluid leasing.
10. Designate as an ACEC.

#### Alternative D

1. Not identified as an SMA.

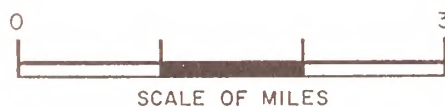


U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

# HORSE MOUNTAIN SPECIAL MANAGEMENT AREA

## LEGEND

-  PUBLIC LAND
-  STATE LAND
-  PRIVATE LAND
-  SMA BOUNDARY





## 9. STALLION

General Description: The Stallion SMA is located approximately 8 air miles east of Socorro, New Mexico. The unit encompasses 22,840 acres of which 19,840 acres are public, 1,920 acres are State, and 1,080 acres are private. The western part of the SMA encompasses the Sierra de las Canas and Presilla WSAs. Until Congressional approval the area will be managed under the Interim Management Policy and Guidelines for Lands Under Wilderness Review (USDI, BLM, as amended, 1983).

The SMA is located within the Chihuahuan Desert. Maximum summer temperatures range from 90° to 100°F. Winter temperatures are generally mild during daylight hours (40° to 50°F.) and moderately cold at night (15° to 30°F.). Spring and fall temperatures tend to be mild. The spring season typically is accompanied by winds ranging from 10 to 40 miles per hour.

Precipitation averages 10 inches per year. Over half the annual rainfall is received during the summer thundershower season (July through September). A third of the year's precipitation usually falls during the winter months (December through March). The remaining moisture, normally 10 percent or less, is received in the spring and fall months.

The SMA is varied in landscape, a rugged desert mountain range characterized by sheer rock escarpments, deep narrow canyons, ridges, mesa tops, broken badlands, rolling pinyon-juniper, and grass covered hills. Elevations range from 5,100 to 6,200 feet with a maximum relief of 1,100 feet.

The SMA is located within the Rio Grande Basin. There are no permanent streams or surface water bodies within the SMA. However, the normally dry arroyos occasionally carry storm runoff to the Rio Grande immediately after rainfall within their respective drainage areas. Periods of flow are short and may be widely spaced in time due to intermittent and sporadic rainfall patterns. Runoff averages 0.1 inches per year.

Soils of the SMA vary from moderately deep to deep and loamy in swales and lower areas to coarse textured, gravelly, ranging from deep to shallow over bed rock. Portions of the area contain gypsum. Much of the SMA is in a critical erosion class with the remaining being moderate. Active and severe sheet and gully erosion is occurring over much of the SMA; particularly in the central and eastern parts. There have been several erosion control projects completed in the past on portions of the SMA. These projects have primarily entailed construction of wire check dams. Most of the work appears to have been completed in 1965. For a more complete description of the watershed refer to a watershed program report completed in May 1983 located in the Socorro Resource Area (SRA) office.

The vegetation of the SMA is typical of the upper Chihuahuan Desert at the northern extreme of its range. Vegetation types have been identified as: desert shrub, pinyon-juniper, creosote, and grassland.

The desert shrub vegetation type encompasses dominant shrubs such as cholla and squawberry associated with winterfat, creosote, mormon tea (et al). Grasses include gramas, dropseeds, muhly, alkali sacaton, and galleta. Prominent forbs include globemallow and wild buckwheat among others.

Pinyon-juniper covers much of the central and northeastern part of the SMA. The understory vegetation is dominated by warm-season grasses of which the gramas are most prevalent. Cool-season grasses associated with this type include silver bluestem and Indian ricegrass among others. Associated shrubs include yucca, Mormon tea, squawberry, cholla, and prickly pear. Forbs, to include a few, are globemallow, hog potato, and aster.

The creosote community includes creosote, cheatgrass, bush muhly, and broom snakeweed as dominantes. Other common species are mesquite, mariola, and grasses such as black grama, galleta and dropseed. Forbs of this type include desertholly and pepperweed among others.

The short grass subtype of the SMA are dominated by grama grasses and also include dropseeds, burrograss, and muhly. Associated shrubs of this type include cholla, mormon tea, and slender gray sagebrush. Russian thistle, globemallow, and desertholly are some forbs included in the type.

The mid-grass subtype is characterized by alkali sacaton. Giant sacaton also occurs in the overflow drainages of the WSA. Other grasses present are burrograss, blue grama, galleta, vine-mesquite, and mat muhly. Forbs include Russian-thistle, desertholly, white horse nettle, and threadleaf groundsel. The only shrub of significant composition in this subtype is broom snakeweed. However, traces of one-seed juniper, fourwing saltbush, cholla, and Apache-plume are present.

For a more detailed description of the vegetation of the SMA refer to the New Mexico State Wilderness Analysis Report for the Sierra de las Canas and Stallion WSAs. This report is located in the SRA office.

Other resources of the SMA include wildlife, range, cultural, mineral, forestry, and recreation.

Management Goals: Stallion SMA will be managed to protect and rehabilitate this critical watershed area through efforts to control erosion by minimizing surface

disturbance, closure and rehabilitation of unneeded roads when additional inventory is complete, and monitoring and control of off-road vehicle (ORV) use.

#### Planned Actions:

##### Alternative A

1. Not identified as an SMA.

##### Alternative B

22,840 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 4.
4. Designate grazing allotments in "M" category.
5. Acquire nonpublic lands.
6. Close and rehabilitate certain trails as a part of the activity plan.

##### Alternative C

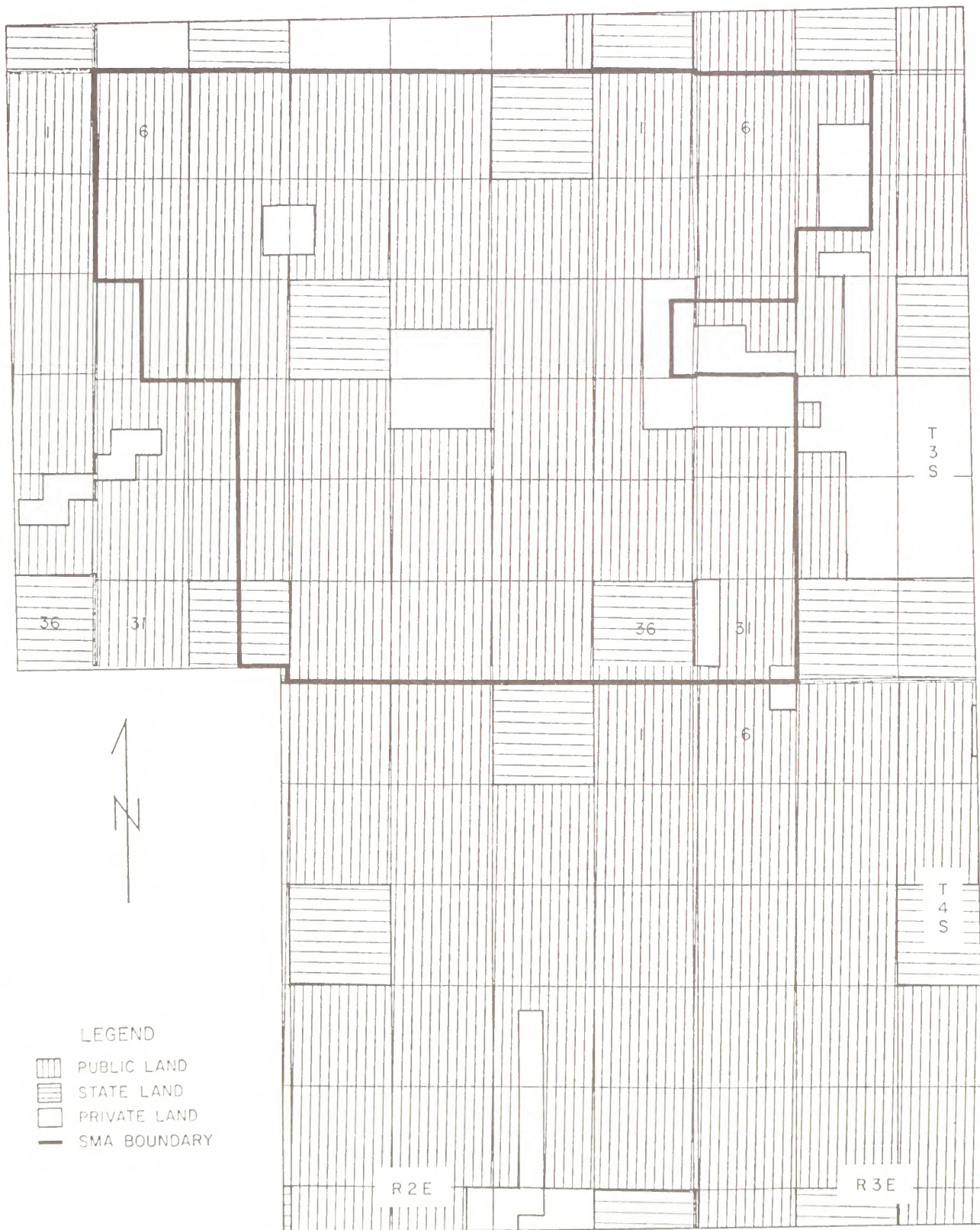
22,840 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Designate grazing allotments in "M" category.
5. Acquire nonpublic lands.

##### ALTERNATIVE D

1. Not identified as an SMA.





LEGEND

- PUBLIC LAND
- STATE LAND
- PRIVATE LAND
- SMA BOUNDARY

0 3  
SCALE OF MILES

U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

STALLION  
SPECIAL MANAGEMENT AREA

## 10. PUERTECITO

General Description: The Puertecito SMA is located approximately 40 miles northwest of Socorro and encompasses 10,040 acres of which 7,140 acres are public with the rest being private and State (2,260 and 640, respectively).

Climatic data for this SMA has been interpreted from data collected at the Magdalena and Laguna weather stations. A 25-year average (1951 through 1975) for the Magdalena Weather Station shows that annual precipitation averages 10.85 inches. Most of this (7.48 inches) falls during the months of July through October. There is an average of 154 frost-free days per year. Data from Laguna, New Mexico, the nearest weather station, shows that precipitation averaged 8.86 inches during the last 26 years (1950 through 1975; no data for 1970). Sixty-four percent, of the total annual precipitation, or 5.66 inches fell during the growing season (July through October). During the same timeframe (no data for 1970 or 1973), the frost-free period averaged 160 days.

The average annual maximum temperatures, from 1960 to 1979 were 71.5°F. at Magdalena and 74.7°F. at Laguna. The average annual minimum temperature for this same period were 32.1°F. at Magdalena and 30.8°F. at Laguna.

The central portion of the SMA consists of deep alluvial flats, fans, and low hills. There is a series of low basalt dikes running north to northwest through this lowland area. Associated with the dikes are remnants of volcanic plugs. The dikes parallel the multiple faulting that has occurred throughout this region. The central portion of the area is a large graben (downthrow block) consisting mainly of the Chinle formation and recent alluvium deposits.

West tilting uplifted blocks form the high mesas on the east, west, and southwest boundaries of the area. Mesa de la Cienega on the east consists of limestones and sandstones from the San Andres and Glorieta formations of Permian Age. The mesas west and south of Puertecito are capped by Dakota sandstones, Mancos shales and the La Cruz Peak formation.

The Rio Salado is the major drainage eastward through the southern part of the SMA and draining into the Rio Grande.

It is an intermittent stream whose flow varies from flash floods to dry. A very large area west of the SMA makes up the Rio Salado headwaters. The principal tributary, the Canada Bonita, passes through the central portion of the area in a southeasterly direction. Like the Rio Salado, it also has several hundred square miles of headwaters and flows in response to summer storms.

There are five primary soil map units within the SMA. The soils vary from deep, well-drained and fined textured to shallow well-drained and coarse textured soil.

Six vegetative types exist on the area. These types range from pinyon-juniper dominated areas on hills and ridges to areas in the flats and gentle slopes featuring fourwing saltbush associated with sacaton. Alluvial fans with fine textured soils are dominated by sacaton, dropseed, and galleta. A small area in the northeast portion of the SMA is composed of blue grama, dropseed and galleta associated with cholla cactus. The Canada Bonito drainage consists primarily of saltcedar with saltbush, spike dropseed, sacaton and vine mesquite as understory species.

Many of the watersheds within the SMA begin outside the boundary of the SMA. Generally the watersheds are subject to severe sheet and/or gully erosion during intensive storm activity. Much of the erosion is due to reduced surface cover, intensive flow periods, and the fact that certain soils are more susceptible to erosion.

Parts of this SMA have had erosion control projects and tests completed in the past (1964 and 1982). In 1964, 2,200 acres of the SMA were ripped and seeded, and an experimental dike project in 1982 consisting of contour dikes (13,800') and wire checks (4,150') was constructed. For more specific information on the projects and a detailed description of the soils and vegetation, refer to the Puertecito-Barranco watershed plan in the SRA office.



Other resources within the SMA include wildlife, range, cultural, mineral, and recreation. There are portions of two grazing allotments within the SMA (Puertecito and Barranco).

Management Goals: Puertecito SMA will be managed to protect and rehabilitate this critical watershed area. Efforts will be made to control erosion by minimizing surface disturbance, closure, and rehabilitation of unneeded roads, when additional inventory is complete, and monitoring and control of ORV use.

Planned Actions:

Alternative A

1. Not identified as an SMA.

Alternative B

10,040 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorizations for ROWs and leases.
3. Fluid Leasing Stipulation No. 4.
4. Designate grazing allotments in "M" category.
5. Close and rehabilitate certain vehicle trails as part of the activity plan.

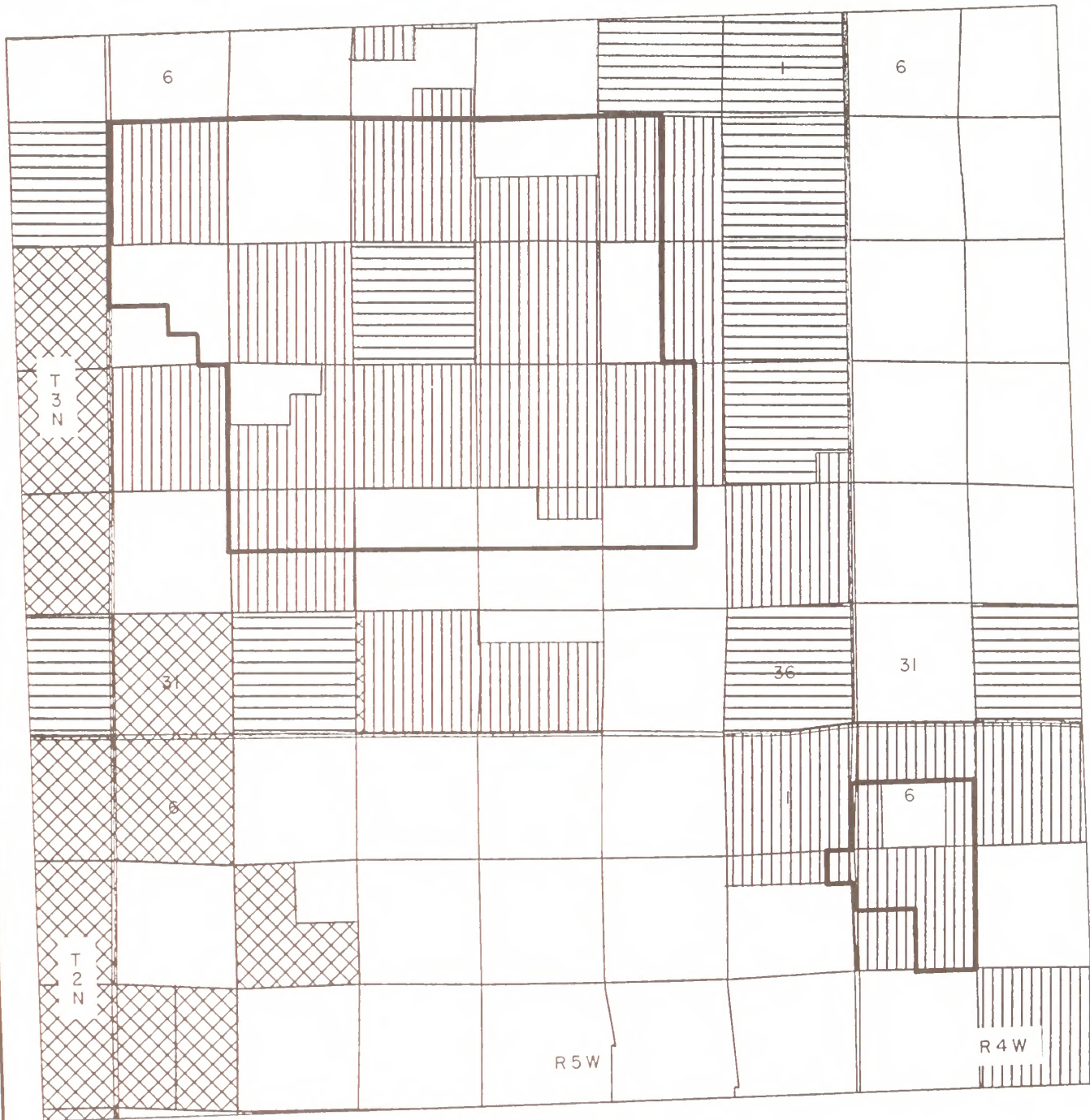
Alternative C

10,040 Acres

1. Close to motor vehicle use.
2. Exclude authorizations for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Designate grazing allotments in "M" category.
5. Acquire nonpublic lands.

Alternative D

1. Not identified as an SMA.



U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

- LEGEND
- PUBLIC LAND
  - STATE LAND
  - PRIVATE LAND
  - INDIAN LAND
  - SMA BOUNDARY

PUERTECITO  
SPECIAL MANAGEMENT AREA





## 11. FENCE LAKE

General Description: The Fence Lake SMA is located in northwestern Catron County approximately 20 air miles northwest of Quemado, New Mexico. The unit encompasses 32,840 acres of land of which 25,280 are public, the rest of which are private and State (3,480 and 4,080, respectively).

The SMA is on the border of the northwestern plateau and southwestern mountains climatic regions. Climatic data is available from four stations near the area: Quemado, Salt Lake, Fence Lake, and the Goesling Ranch. Only a few years' data is available at Salt Lake and the Goesling Ranch. Quemado is in the southwestern mountains climatic region and Fence Lake is in the northwestern plateau region so the climate for the area is somewhere in between the two. Generally, Fence Lake receives more precipitation than Quemado with an average annual value of 12.42 inches for the 1970s. Quemado had an average annual value of 10.98 inches during this same period. Historically, there has been a large variation in average annual precipitation. Average annual temperatures are nearly the same for Fence Lake and Quemado, about 47.7° F. Frost-free days are in the 103 and 106 range.

There are three major land forms within the area: the nearly level mesa tops, the steep sandstone and shale escarpments and hills, and the gently sloping alluvial fans and drainageways. Most of the severe gullying problems, common to this area, occur on the alluvial fans and drainageways.

The SMA contains four major geologic systems: Quaternary, Tertiary, Cretaceous, and Triassic in an east-west plunging syncline on the western portion of the unit.

The bottom of the syncline is near the center of the western section of the area and slopes upward to mesas north and south. The syncline and structural movements undoubtedly had an influence on the arroyo cut and fill cycles in Twenty-two Draw. For a detailed description of the geologic units located within the area refer to the Cox and Estrada watershed plans in the SRA office.

The soils of the area vary considerably from relatively deep and well-drained to shallow over shale. Much of the area is rock outcrop varying to badland alluvial fans and plains. Soil textures vary from clay to sandy loams to extremely gravelly loamy coarse sands. Erosion potentials vary from slight to high. For a more detailed description of the soil units within the area refer to the activity plans referenced above.

The topography of the area is comprised of plains and alluvial fans generally in the southern part of the area interspersed with rolling hills to high mesas and escapements to the north. Elevations vary from 6,400 feet in the bottoms to over 7,400 in the northeastern part of the unit.

Much of the watershed within the SMA is subject to severe headcutting, soil piping, and sheet erosion resulting in numerous continuous and discontinuous gullies. Erosion control measures in the past have included construction of gully plugs, detention dams, wire checks, etc. Much of the existing erosion control system is in need of maintenance since many of the structures are at capacity or have failed.

Vegetation within the SMA varies from giant sacaton, alkali sacaton, and scattered shrubs such as fourwing saltbush, Apache-plume in the wetter bottomlands to alkali sacaton, western wheatgrass, blue grama, galleta, mixed with fourwing saltbush, wolfberry, and winterfat in finer textured uplands. Much of the area is pinyon-juniper woodland in the higher elevations and mesas.

Other resources within this SMA include wildlife, range, forestry, cultural, and mineral. There are two active grazing allotments (Cox and Estrada).

Management Goals: Fence Lake SMA will be managed to protect and rehabilitate this critical watershed area through efforts to control erosion by minimizing surface disturbance, closure and rehabilitation of unneeded roads when additional inventory is complete, and monitoring and control of ORV use.

Planned Actions:

Alternative A

1. Not identified as an SMA.

Alternative B

32,840 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorizations for ROWs and leases.
3. Fluid Leasing Stipulation No. 4.
4. Designate grazing allotment in "M" category.
5. Close and rehabilitate certain vehicle trails.

Alternative C

32,840 Acres

1. Close to motor vehicle use.
2. Exclude authorizations for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Designate grazing allotment in "M" category.
5. Close all unmaintained vehicle trails.
6. Acquire nonpublic lands.

Alternative D

1. Not identified as an SMA.





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BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

FENCE LAKE  
SPECIAL MANAGEMENT AREA

LEGEND  
PUBLIC LAND  
STATE LAND  
PRIVATE LAND  
SMA BOUNDARY



## 12. TINAJAS

General Description: Tinajas ACEC centers on a narrow incised canyon, which drains a rough, broken landscape of sedimentary rocks a few miles east of the Rio Grande near the town of Socorro, New Mexico. Within the narrow canyon lies the Arroyo del Tajo Pictograph Site, discovered by Dr. Robert Weber of the New Mexico Bureau of Mines and Mineral Resources. This site consists of a unique assemblage of pigment-painted pictographs, which have been identified by Native Americans as representing elements of pueblo religion. The area surrounding the site contains interesting geologic formations and sinkhole features known as "Tinajas," providing the opportunity for recreational hiking and other nondisturbing activities.

Management Goals: Tinajas ACEC will be managed to preserve and protect the pictographs for public interpretation and socio-cultural values. The area will be managed for recreational and scenic values.

### Planned Actions:

#### Alternative A

ACEC 1,280 acres

1. Continue existing CRMP to manage for public interpretation and socio-cultural values.
2. Implement ACEC.
3. Withdraw 200 acres from locatable mineral entry.

#### Alternative B

ACEC 3,520 Acres

1. Restrict authorization for ROWs and leases.
2. Restrict mineral material disposals.
3. Withdraw 1,500 acres from locatable mineral entry.
4. Limit motor vehicle use to existing roads and trails.
5. Close motor vehicle use-2 miles.
6. Increase size of management area.
7. Fluid Leasing Stipulation No. 3.
8. Implement ACEC on 1,280 acres and designate an additional 2,240 acres as ACEC.

#### Alternative C

ACEC 3,520

1. Exclude authorization for ROWs and leases.
2. Exclude mineral material disposals.
3. Withdraw 3,520 acres from locatable mineral entry.
4. Close to motor vehicle use.
5. Increase size of management area.
6. Fluid Leasing Stipulation No. 3.
7. Implement ACEC on 1,280 acres and designate an additional 2,240 acres as ACEC.

#### Alternative D

ACEC 1,280 Acres

1. Continue existing CRMP to manage for public interpretation and socio-cultural values.
2. Withdraw 300 acres from locatable mineral entry.
3. Implement ACEC on 1,280 acres.









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LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

# TINAJAS SPECIAL MANAGEMENT AREA

## LEGEND

-  PUBLIC LAND
-  STATE LAND
-  PRIVATE LAND
-  SMA BOUNDARY



### 13. FORT CRAIG

General Description: Fort Craig was founded in 1854 as one of the first and largest, military strongholds in the New American Territory of New Mexico. Its purpose was to establish a military presence in the region to discourage Apache warfare and to provide retaliatory potential against the Apaches for their incursions into Mexico under the Treaty of Guadalupe Hildago. Military excursions from the Fort played an important role in the campaigns against Geronimo, Victorio, Nana, and other notable Apache leaders. During the American Civil War, troops from the Fort engaged a Confederate column at the nearby area of Valverde. The tactics and events of the Battle of Valverde are topics of study of a U.S. Army Staff College, which conducts regular field classes at the Fort and battle site. The Fort was constructed primarily of adobe obtained from local sources, which are high in silt content and subject to rapid erosion. As a result of this and vandalism, which predates the return of the Fort to public ownership through the Archeological Conservancy, most of the Fort's structural remains are reduced to low mounds. The Fort, however, retains great potential for archeological investigation and is a notable site of public interpretation and visitation. Fort Craig is listed on the National Register of Historic Places (NRHP).

Management Goals: Fort Craig will be managed for protection of cultural resource values, public interpretation, and future scientific use.

#### Planned Actions:

##### Alternative A

160 Acres

1. Continue existing CRMP.
2. Acquire legal public access.
3. Protect from grazing.

##### Alternative B

160 Acres

1. Acquire all minerals.
2. Acquire legal access.
3. Continue grazing closure.
4. Fluid Leasing Stipulation No. 3.
5. Restrict authorization for ROWs and leases.
6. Restrict mineral material disposals.
7. Develop visitor facilities and public interpretation values.
8. Limit motor vehicle use to existing roads and trails.

##### Alternative C

160 Acres

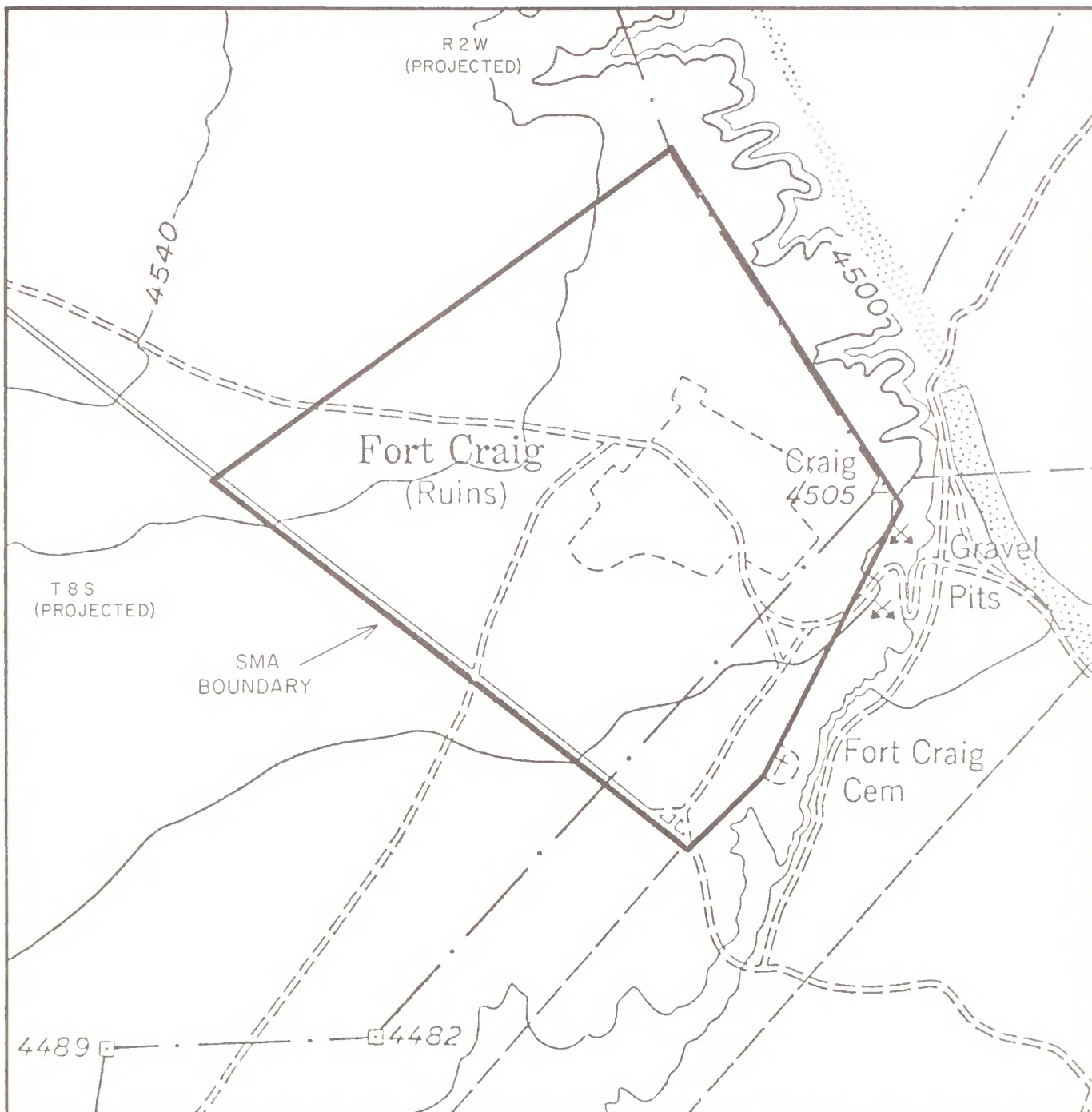
1. Acquire all minerals.
2. Acquire legal access.
3. Continue grazing closure.
4. Fluid Leasing Stipulation No. 3.
5. Exclude authorizations for ROWs and leases.
6. Exclude mineral material disposal.
7. Develop visitor facilities and public interpretation values.
8. Close to motor vehicle use.

##### Alternative D

160 Acres

1. Continue existing CRMP.
2. Acquire legal access.
3. Protect from grazing.





U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

FORT CRAIG  
SPECIAL MANAGEMENT AREA



#### 14. CONTINENTAL DIVIDE NATIONAL SCENIC TRAIL

General Description: The Continental Divide National Scenic Trail (CDNST) has been designated by the Congress of the United States. Congress established a scenic corridor 50 miles on either side of the actual Continental Divide, with the treadway for the trail to be proposed through the planning of the respective land managing agency, and approved by the Continental Divide Trail Committee. The treadway proposed in this RMP primarily parallels the Continental Divide for approximately 24 miles. The proposed treadway deviates from the actual Divide in areas to avoid conflicts with private land and to enhance recreation opportunity by routing the trail through significant scenic and recreational areas. About 20 miles of the proposed trail are located within the Continental Divide WSA.

The width of the treadway corridor proposed in this RMP is approximately 1/2 mile. The trail traverses a wide variety of topography, including rolling hills and mesas, broken escarpments, and impressive canyons. The western half of the trail crosses the Pelona SMA. A wide variety of opportunities exist for additional side trails and interpretative services because of the significantly contrasting ecosystems being traversed. One side trail, approximately one mile in length and terminating atop Pelona Peak, is proposed in this RMP. Other side trails and opportunities would be considered during the activity planning stage.

Cooperative and coordinated management of specific trail segments outside Federal land areas and on private lands will be provided for through the use of Cooperative Agreements and authorities provided for in the National Trails System Act, as amended (the Continental Divide National Scenic Trail Comprehensive

Plan prepared by the Forest Service, Bureau of Land Management, and National Park Service, dated 11/6/85).

Management Goals: Management of the CDNST SMA would emphasize CDNST objectives established by the Continental Divide Trail Committee and recreation opportunities. The SRA would coordinate and cooperate with all involved members of the public.

#### Planned Actions:

##### Alternative A

1. Not identified as an SMA.

##### Alternative B

7,680 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Limit fire suppression.
4. Close to woodcutting.
5. Restrict mineral material disposals.
6. Fluid Leasing Stipulation No. 1.
7. Designate a 1/2-mile-wide trail corridor.
8. Acquire legal access.
9. Restrict geophysical operations to nonvehicular methods.

##### Alternative C

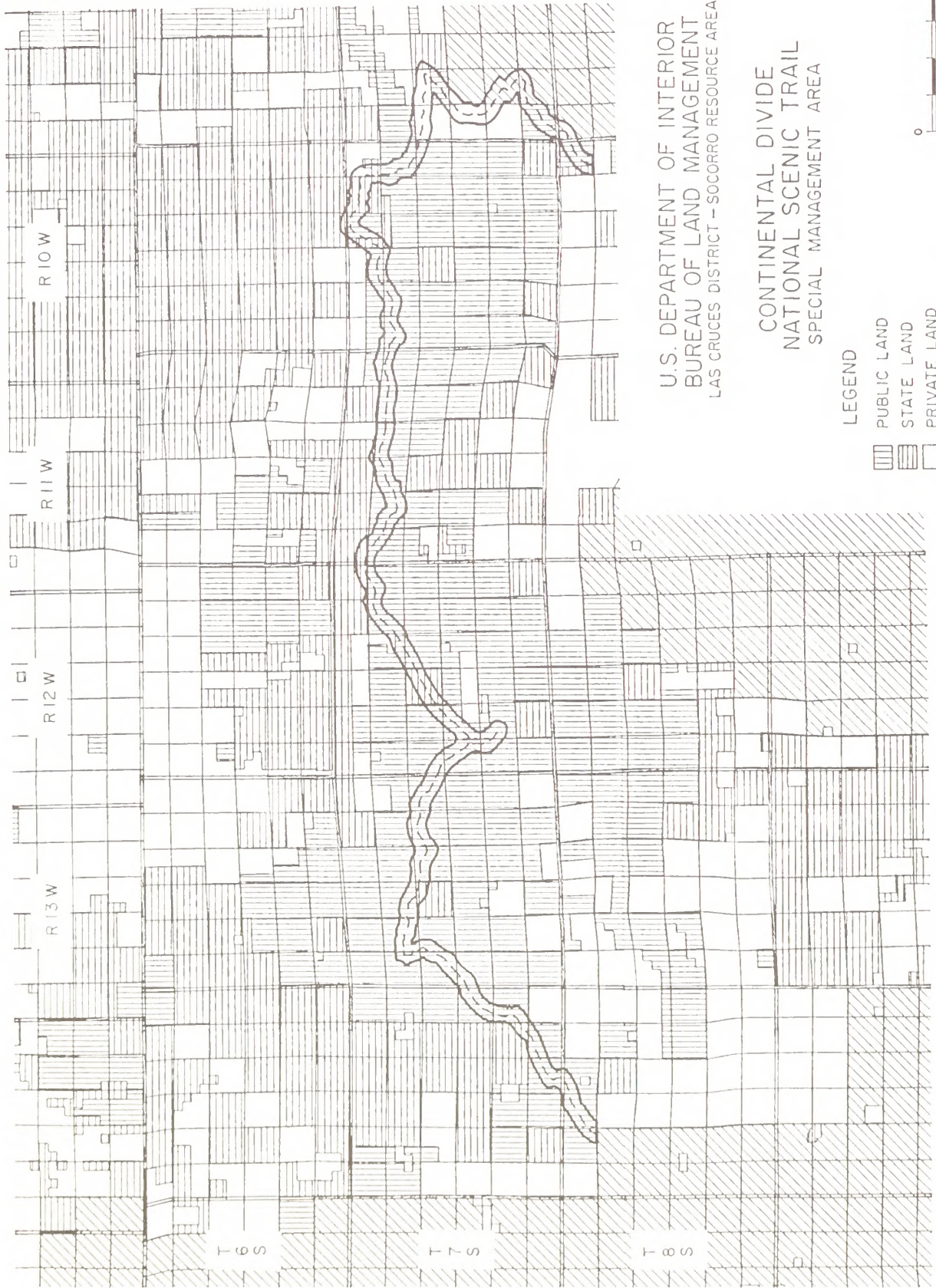
7,680 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Exclude authorization for ROWs and leases.
3. Limit fire suppression.
4. Close to woodcutting.
5. Exclude mineral material disposals.
6. Fluid Leasing Stipulation No. 3.
7. Designate a 1/2-mile-wide trail corridor.
8. Acquire legal access.
9. Restrict geophysical operations.
10. Designate as an ACEC.

##### Alternative D

1. Not identified as an SMA.





## 15. DATIL WELL CAMPGROUND

General Description: The Datil Well Campground Special Recreation Management Area (SRMA) includes approximately 640 acres and is located in west-central New Mexico, off of Highway 60. The campground includes one of 15 water wells spaced every 10 miles along the historic Magdalena Livestock Driveway.

A popular picnicking and camping area, the Datil Well Campground has 22 individual camp sites and a group shelter for large gatherings. The group shelter and 12 of the individual campsites are covered. All have picnic tables, fire grates and fire pits. Drinking water, firewood, and toilets are provided. A 3-mile hiking trail runs through pinyon-juniper woodlands along the ridges west of the campground. Three scenic vista points offer spectacular views of the San Augustine Plains and surrounding mountains. The trail and vistas also offer an occasional glimpse of wildlife and opportunities for quiet and solitude.

Management Goals: Datil Well Campground will be managed to provide developed camping opportunities in a roaded natural setting and to provide interpretative and educational opportunities as the highest priority over other resource uses in this area when considering proposed actions within the SMA.

### Planned Actions:

#### Alternative A

160 Acres

1. Manage 22 campsites and shelters.

#### Alternative B

640 Acres

1. Restrict authorization for ROWs and all leases.
2. Close to woodcutting.
3. Limit motor vehicle use to existing roads and trails.
4. Fluid Leasing Stipulation No. 3.
5. Withdraw 80 acres from locatable mineral entry.

#### Alternative C

640 Acres

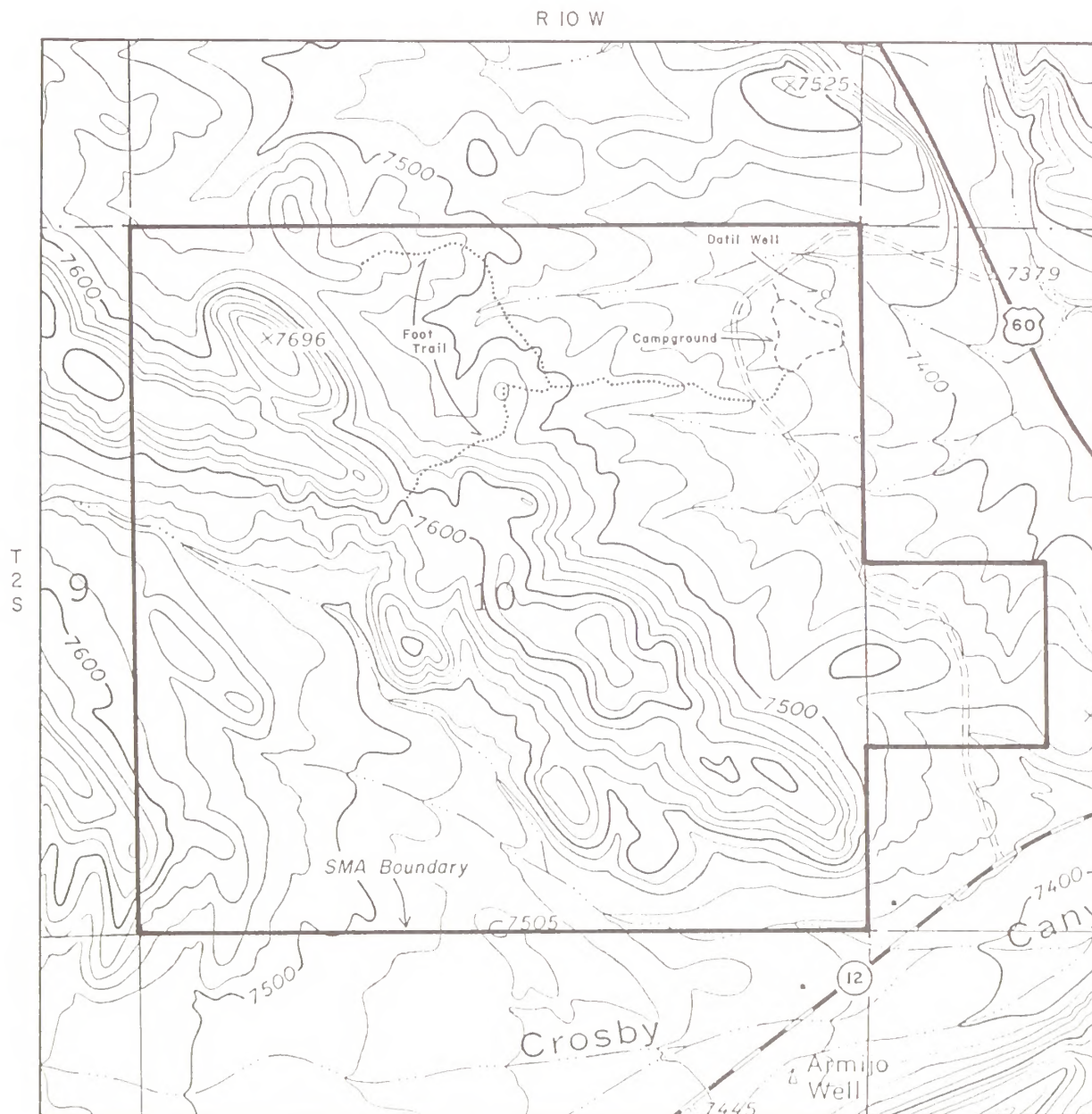
1. Exclude authorization for ROWs and all leases.
2. Close to woodcutting.
3. Limit motor vehicle use to existing roads and trails.
4. Fluid Leasing Stipulation No. 3.
5. Withdraw 160 acres from locatable mineral entry.
6. Develop additional campsites.

#### ALTERNATIVE D

640 Acres

1. Manage 22 campsites.
2. Existing Fluid Leasing Stipulation No. 4.





U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

DATIL WELL CAMPGROUND  
SPECIAL MANAGEMENT AREA



## 16. WALNUT CANYON

General Description: The Walnut Canyon SMA is located in Socorro County, approximately 12 air miles south of Socorro and 4 air miles west of San Antonio. The SMA contains 1,730 acres of which 1,130 are public and 600 are State.

Walnut Canyon SMA varies in elevation from 5,000 feet up to 5,940 feet. This SMA is characterized by a rugged canyon and associated rough foothill country.

The major vegetative associations include arroyo-riparian, mixed shrubgrass hills and pinyon-juniper hills.

There are 121 potentially-occurring wildlife species in the SMA. Game species include mule deer, pronghorn antelope, and an occasional mountain lion. Other species include bobcats, coyotes, jackrabbits, cottontails, quail, raptors, and various species of songbirds, reptiles, and amphibians. Golden eagles, prairie falcons, and great-horned owls are known to utilize and nest annually in this SMA.

The Walnut Canyon SMA is a rugged landscape which exhibits the diversity of color, vegetation, relief, shape, and geology characteristic of desert foothill mountain communities dissected with long, deep, and wide arroyo-type canyons. This area contains some exposed unique rhyolite features and some unique clay-type areas which exhibit an intermixed pink and gray coloration on a background of pinyon-juniper covered rolling hills.

Recreation uses in this SMA include scenic sightseeing, big game hunting, hiking, nature photography, rock hounding, and mountain climbing.

Opportunities for environmental education in this area exist based on the wildlife, vegetation, geology, and cultural resources present in the SMA.

Management Goals: Walnut Canyon will be managed to protect raptor wintering and nesting habitats and geologic, recreational and scenic values as the highest priority over the other resource uses when considering proposed actions within the SMA.

### Planned Actions

#### Alternative A

1. Not identified as an SMA.

#### Alternative B.

##### 1,730 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Close to woodcutting.
4. Restrict mineral material disposals.
5. Acquire nonpublic lands.
6. Fluid Leasing Stipulation No. 4.
7. Restrict geophysical operations.
8. Acquire legal access.

#### Alternative C

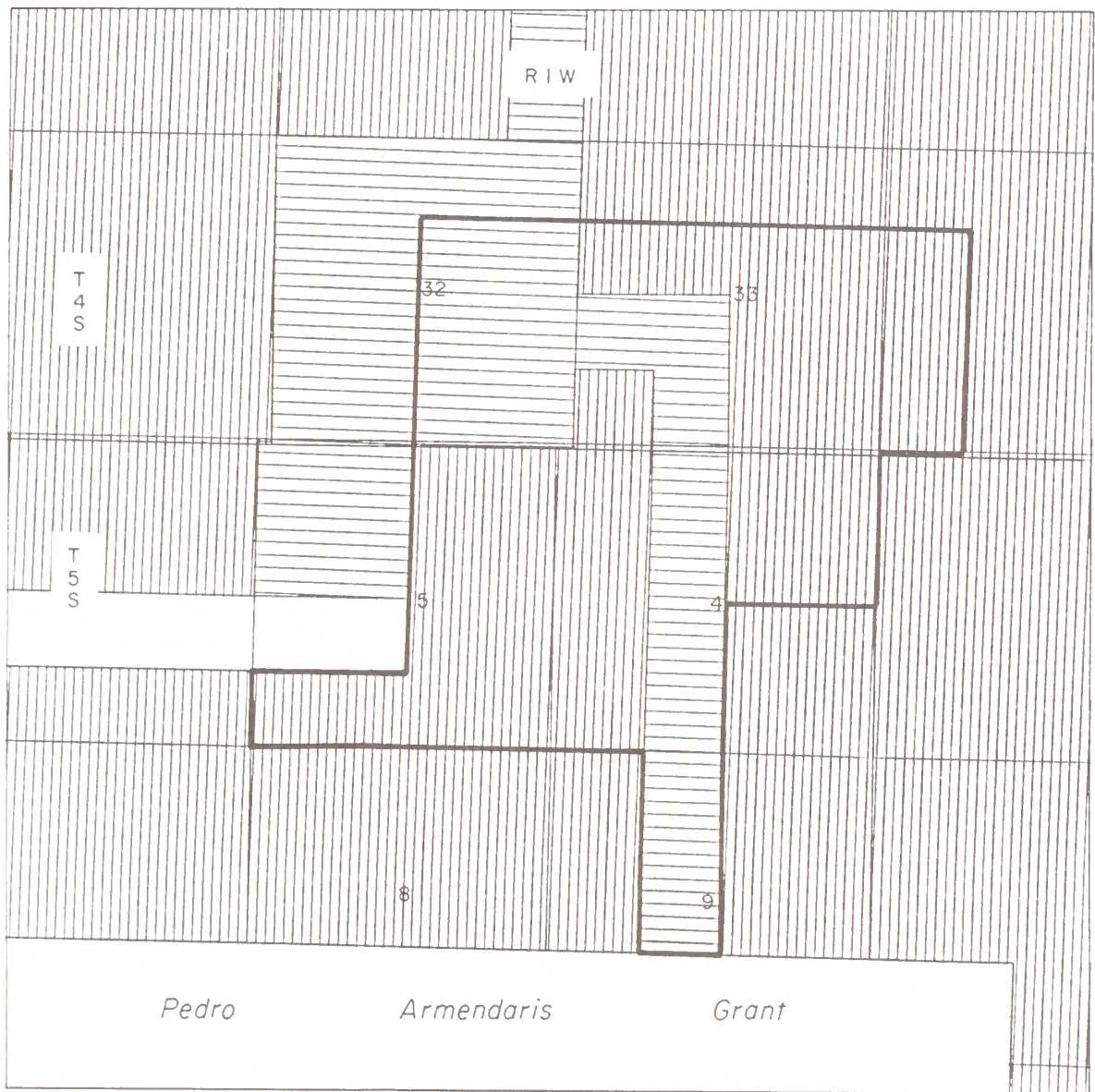
##### 1,730 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Close to woodcutting
4. Exclude mineral material disposals.
5. Acquire nonpublic lands
6. Fluid Leasing Stipulation No. 1.
7. Exclude geophysical operations.
8. Acquire legal access.
9. Withdraw from locatable mineral entry.
10. Designate as an ACEC.

#### Alternative D

1. Not identified as an SMA.





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LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

# WALNUT CANYON SPECIAL MANAGEMENT AREA

- LEGEND
- PUBLIC LAND
  - STATE LAND
  - PRIVATE LAND
  - SMA BOUNDARY



## 17. THE BOX

General Description: The Box SMA is located in Socorro County about six miles southwest of Socorro, and is easily accessible from U.S. Highway 60. The SMA contains 320 acres of public lands. A local rock climbing club utilizes this area on a regular basis. Due to the mild climate in south-central New Mexico, climbing opportunities are afforded here year-round. Due to recent publicity about the area, climbers from other states and even other countries have used the area, often in route to other climbing locations. This SMA should receive special management to ensure future legal access and preservation of current opportunities. Potential conflicts with mining exist in the area.

Management Goals: The Box will be managed to enhance recreational values, primarily rock climbing, and to maintain the scenic quality of the area.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

##### 320 Acres

1. Withdraw 40 acres from locatable mineral entry.
2. Fluid Leasing Stipulation No. 4.
3. Limit motor vehicle use to existing roads and trails.
4. Restrict authorizations for ROWs and leases.

#### Alternative C

##### 320 Acres

1. Withdraw 320 acres from locatable mineral entry.
2. Fluid Leasing Stipulation No. 1.
3. Close to motor vehicle use.
4. Exclude authorizations for ROWs and leases.

#### ALTERNATIVE D

1. Not identified as an SMA.





U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

THE BOX  
SPECIAL MANAGEMENT AREA



## 18. TEYPAMA

General Description: Teypama Piro pueblo ruin is a late prehistoric and early historic habitation site of the Piro Indians, who occupied the central Rio Grande Valley at the time of Spanish contact. The site is listed on the NRHP, and consists of over two hundred rooms with kivas and a central plaza. It is located on a terrace of the west bank of the Rio Grande and overlooks the floodplain, where the agricultural economy of the occupants was no doubt based. The site has experienced severe damage from vandals, but retains great potential for scientific investigation.

Management Goals: The Teypama SMA will be managed for protection of cultural resource values, public interpretation, and future scientific use.

### Planned Actions:

#### Alternative A

10 Acres

1. Implement present CRMP for 10-acre "Teypama" site only.
2. Stabilize ruins.

3. Manage for public interpretation and future scientific use.
4. Complete fencing to exclude cattle grazing.

#### Alternative B

17 Acres

1. Restrict authorization for ROWs and leases.
2. Restrict mineral material disposals.
3. Exclude livestock grazing on 17 acres by expanding the enclosure.
4. Fluid Leasing Stipulation No. 3.
5. Close to motor vehicle use.

#### Alternative C

17 Acres

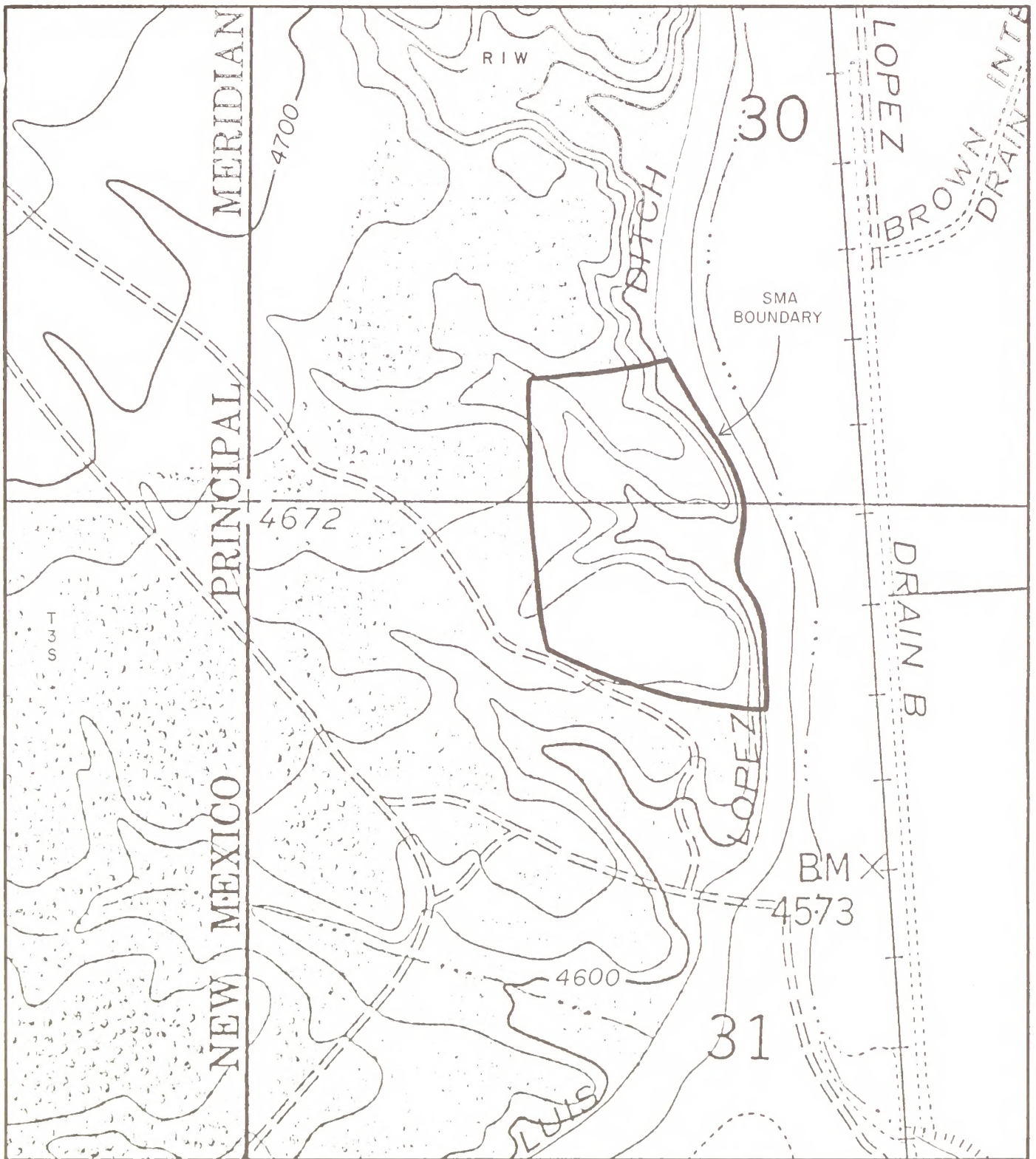
1. Exclude authorization for ROWs and leases.
2. Exclude mineral material disposals.
3. Exclude livestock grazing on 17 acres by expanding the enclosure.
4. Fluid Leasing Stipulation No. 3.
5. Close to motor vehicle use.

#### Alternative D

10 Acres

1. Implement present CRMP for 10-acre "Teypama" site only.





U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

TEYPAMA  
SPECIAL MANAGEMENT AREA



## 19. NEWTON SITE

General Description: The Newton Site consists of a 150 to 200 room pueblo, a large, double-walled kiva or plaza, and associated outlying room blocks. The site was occupied from about A.D. 1200 to A.D. 1325 and represents an important locus for scientific investigation, lying on the southern periphery of the "Acoma Culture Province," and the extreme eastern periphery of the major occupation of the same era, of the Upper Little Colorado drainage. The site has been heavily disturbed by vandals and by uncontrolled student excavations prior to acquisition by the Federal Government, but retains good potential for scientific investigation.

Management Goals: Newton Site will be managed to preserve and protect for public interpretation and future scientific use.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

40 Acres

1. Nominate to NRHP.
2. Limit motor vehicle use to existing roads and trails.
3. Restrict authorization of ROWs and leases.
4. Fluid Leasing Stipulation No. 1.
5. Restrict mineral material disposals.
6. Exclude woodcutting.
7. Stabilize ruins.

#### Alternative C

40 Acres

1. Nominate to NRHP.
2. Close to motor vehicle use.
3. Exclude authorization of ROWs and leases.
4. Fluid Leasing Stipulation No. 3.
5. Exclude mineral material disposals.
6. Exclude woodcutting.
7. Stabilize ruins.

#### Alternative D

1. Not identified as an SMA.



## 20. PLAYA PUEBLO

General Description: This SMA consists of two major prehistoric pueblo ruins probably associated with the Tompiro prehistoric culture area. These sites are notable in addition to their size (200 plus rooms each) because of the fact that they are not located on water courses, but rather seem to have exploited wide, shallow interval drainages (playas), and, if early ceramic assessments are correct, were occupied over extraordinarily long time periods. Ceramic sequences for one of the sites suggest occupation from about A.D. 1150 through the 1700s. One of the ruins has been extensively vandalized, but retains good scientific potential, while the other remains virtually intact.

Management Goals: Playa Pueblo will be managed to preserve and protect for public interpretation and future scientific use.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

320 Acres

1. Acquire nonpublic lands.
2. Restrict authorization for ROWs and leases.
3. Restrict mineral material disposals.
4. Fluid Leasing Stipulation No. 1.
5. Exclude livestock grazing.
6. Fence and stabilize ruins.
7. Include in thematic Tompiro National Register Nomination.
8. Limit motor vehicle use to existing roads and trails.
9. Close certain vehicle trails - 0.04 miles.

#### Alternative C

320 Acres

1. Acquire nonpublic lands.
2. Exclude authorization for ROWs and leases.
3. Exclude mineral material disposals.
4. Fluid Leasing Stipulation No. 3.
5. Exclude livestock grazing.
6. Fence and stabilize ruins.
7. Include in thematic Tompiro National Register Nomination.
8. Close to motor vehicle use.

#### ALTERNATIVE D

1. Not identified as an SMA.

## 21. RIO SALADO

General Description: The Rio Salado SMA consists of approximately 6,400 acres of public land, and is located 8 miles west of Ladron Mountain. The area was nominated as an SMA because of the cultural values and the unusual plant community contained within.

The Rio Salado cultural resource district consists of approximately 30 known archeological sites representative of developmental and early puebloan occupation along the middle Rio Salado drainage, which hold considerable potential for elucidation of cultural dynamics in the region. The area is composed of complex campsites/processing sites, and small habitation sites ranging in age from Basketmaker III/Pueblo I, through late Pueblo II, with an unexplained absence of later puebloan material (which awaits investigation).

The Riley Caves consists of two, small limestone cave formations which have been recommended for special management by the NMDNR. The larger of the two caves supports a small population of cave fauna and geologic features of interest. The caves are located on the high ridges north of the Rio Salado and west of Sierra Ladrones.

The NMDNR and the Nature Conservancy focused attention to the area because it is habitat to a variety of flora. In this area is a combination of geological substrates and an overlapping and intermixing of the Great Basin and Chihuahuan floras that result in an unusual plant community. Several Chihuahuan

desert species reach their northernmost extension here and several Great Basin species reach their southernmost boundaries.

Management Goals: Rio Salado SMA will be managed to preserve and protect for cultural properties, rare and endemic plants, and natural cave features.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

6,400 Acres

1. Restrict authorization for ROWs and leases.
2. Restrict mineral material disposals.
3. Fluid Leasing Stipulation No. 1.
4. Nominate as district to NRHP.
5. Limit motor vehicle use to existing roads and trails.
6. Exclude woodcutting.
7. Restrict geophysical operations.
8. Implement present CRMP for 20 acres.

#### Alternative C

6,400 Acres

1. Exclude authorization for ROWs and leases.
2. Exclude mineral material disposals.
3. Fluid Leasing Stipulation No. 3
4. Nominate as district to NRHP.
5. Close to motor vehicle use.
6. Exclude woodcutting.
7. Restrict geophysical operations.
8. Designate as an ACEC.

#### Alternative D

1. Not identified as an SMA.










U.S. DEPARTMENT OF INTERIOR  
BUREAU OF LAND MANAGEMENT  
LAS CRUCES DISTRICT - SOCORRO RESOURCE AREA

# RIO SALADO SPECIAL MANAGEMENT AREA

## LEGEND

-  PUBLIC LAND
-  STATE LAND
-  PRIVATE LAND
-  FOREST SERVICE LAND
-  SMA BOUNDARY



## 22. TOWN OF RILEY

General Description: The ghost town of Riley lies on the Rio Salado, north of Magdalena, New Mexico. Originally known as Santa Rita, the town was settled in the 1880s by Spanish-American homesteaders from Socorro and other villages along the Rio Grande. The town's economy was primarily based on farming the Rio Salado flood plain, with a brief expansion and then collapse of mining, followed by down-cutting of the river bed, which resulted in abandonment of the town proper in the 1930s and 1940s. Several descendants of original settlers remain in the surrounding area, however, and engage in cattle ranching. Riley may be unique as a ghost town in that these and other descendants of the original settlers continue a cultural tradition as "Followers of Santa Rita." They perform religious observances and regularly maintain the Santa Rita Church, graveyard, and other features of the abandoned town. A religious task structure is maintained even though the descendants are scattered over a wide region, and return annually for a mass and fiesta.

Management Goals: The BLM lands surrounding the small, patented portions of the Town of Riley are to be managed to preserve and protect historical properties and to ensure no adverse effect upon the socio-cultural traditions of the "Followers of Santa Rita".

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

600 Acres

1. Survey Federal ownership within historic town.
2. Limit motor vehicle use to existing roads and trails.
3. Restrict authorization for ROWs and leases.
4. Close to woodcutting.
5. Restrict mineral material disposals.
6. Fluid Leasing Stipulation No. 4.
7. Restrict geophysical operations.
8. Nominate to NRHP.

#### Alternative C

600 Acres

1. Survey Federal ownership within historic town.
2. Close to motor vehicle use.
3. Exclude authorization for ROWs and leases.
4. Close to woodcutting.
5. Exclude mineral material disposals.
6. Fluid Leasing Stipulation No. 1.
7. Restrict geophysical operations.
8. Nominate to NRHP.
9. Withdraw from locatable mineral entry.
10. Acquire nonpublic lands.
11. Designate as an ACEC.

#### Alternative D

1. Not identified as an SMA.



### 23. MOGOLLON PUEBLO

General Description: This NRHP site is the largest Reserve Phase Pueblo (ca. A.D. 900 +) known. This SMA is located northeast of Quemado, New Mexico, in Catron County. It consists of a number of large room blocks with internal kivas, a great kiva, and numerous associated cultural material concentrations and petroglyph panels. The site has been subject to severe vandalism, but retains great potential for scientific investigation.

Management Goals: Mogollon Pueblo SMA will be managed to preserve and protect the ruins and petroglyphs for public interpretation, future scientific use, and socio-cultural values.

Planned Actions:

Alternative A

1. Not identified as an SMA.

Alternative B

640 Acres

1. Restrict authorization for ROWs and leases.
2. Restrict mineral material disposals.
3. Fence core area and stabilize.
4. Fluid Leasing Stipulation No. 2.
5. Exclude livestock grazing (12-acre core area).
6. Limit motor vehicle use to existing roads and trails.

Alternative C

640 Acres

1. Exclude authorization for ROWs and leases.
2. Exclude mineral material disposals.
3. Fence core area and stabilize.
4. Fluid Leasing Stipulation No. 3.
5. Exclude livestock grazing (12-acre core area).
6. Close to motor vehicle use.
7. Withdraw 320 acres from locatable mineral entry.

Alternative D

1. Not identified as an SMA.

## 24. MOCKINGBIRD GAP

General Description: Mockingbird Gap is listed as a New Mexico State Historic Property and consists of an extensive complex of Paleo-Indian campsites, including both Clovis and Folsom elements (ca. 10,000 B.C.). Portions of the cultural resources, which are found over 18 square miles east of San Antonio, New Mexico, in Socorro County, have been investigated by several researchers, but no comprehensive inventory has been conducted to delineate the full expanse of the site district, nor its component features. Paleo-Indian sites are rare, and this multi-component site provides special opportunities for research on early man in the southwest.

Management Goals: Mockingbird Gap SMA will be managed to preserve and protect cultural resources for future scientific use.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

11,970 Acres

1. Restrict authorization for ROWs and leases.
2. Restrict mineral material disposals.
3. Fluid Leasing Stipulation No. 4.
4. Nominate to NRHP.
5. Limit motor vehicle use to existing roads and trails.

#### Alternative C

11,970 Acres

1. Exclude authorization for ROWs and leases.
2. Exclude mineral material disposals.
3. Fluid Leasing Stipulation No. 1.
4. Nominate to NRHP.
5. Close to motor vehicle use.

#### Alternative D

1. Not identified as an SMA.



## 25. SAN LORENZO CANYON

General Descriptions: San Lorenzo Canyon, a rugged scenic canyon land area bordering the Sevilleta Wildlife Refuge, is located about 10 miles northwest of Socorro, New Mexico. The area is primarily used for hiking, sightseeing, photography, picnicking and camping. Due to its proximity to Socorro, it offers excellent day use opportunities.

Other significant resources within the SMA include wildlife habitat for mule deer and various raptors and cultural resources. The topography within the SMA is rugged and quite diverse. Pinnacles and cliffs abound, creating a rocky landscape of high scenic quality. Some conflicts with ORV use and there is a lack of recreation facilities in the SMA (i.e. picnic tables, grills).

Management Goals: San Lorenzo Canyon SMA will be managed to improve recreation opportunities, wildlife habitat, and to protect cultural and scenic resources.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

4,800 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Acquire 2,240 acres of nonpublic lands.
3. Restrict geophysical operations.
4. Fluid Leasing Stipulation No. 4.
5. Restrict authorizations for new ROWs and leases.

#### Alternative C

4,800 Acres

1. Close to motor vehicle use.
2. Acquire 2,240 acres of nonpublic lands.
3. Exclude geophysical operations.
4. Close to fluid leasing.
5. Exclude authorizations for ROWs and leases.
6. Designate as an ACEC.

#### ALTERNATIVE D

1. Not identified as an SMA.



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LEGEND  
 PUBLIC LAND  
 STATE LAND  
 PRIVATE LAND  
 SMA BOUNDARY

SAN LORENZO CANYON  
SPECIAL MANAGEMENT AREA

0 1  
  
 MILES





## 26. SAN PEDRO

General Description: The San Pedro SMA contains approximately 1,200 acres, and is located east of San Antonio, New Mexico. The area is characterized by low ridges, footslopes, arroyos, and water courses. Soils are shallow to deep, and usually very gravelly with underlying layers of fine sandy loams and caliche.

Vegetation within the areas is of a mixed-shrub grassland type with juniper, snakeweed, creosotebush, Apache-plume, black grama, galleta, fluffgrass, sand dropseed, and a variety of other species making up the ecosystem.

The area was nominated by the Nature Conservancy and the NMDNR for special management because it is habitat to the plant species, Amsonia fugatei. This species of Amsonia, native to the Southwestern United States and Northwestern Mexico consists of a few, generally small, isolated populations. No two populations are precisely alike and classification is a problem when comparing phenotypic variation within and between populations (McLaughlin 1985). The species of Amsonia here cited possesses a sufficiently distinctive combination of characters to warrant its recognition as a new species (McLaughlin 1985).

The San Pedro SMA meets the importance criterion for ACEC designation because of the

sensitivity of the plant species Amsonia fugatei. The species has been proposed to the FWS for listing as a Federal candidate on the endangered species list.

Management Goals: San Pedro SMA will be managed to maintain and protect the habitat for Federal T&E plants.

### Planned Actions:

#### ALTERNATIVE A

1. Not identified as an SMA.

#### Alternative B

1,200 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Initiate monitoring studies.
5. Designate as an ACEC.
6. Restrict mineral material disposals.

#### Alternative C

1,200 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 3.
4. Initiate monitoring studies.
5. Designate as an ACEC.
6. Exclude mineral material disposals.
7. Withdraw from locatable mineral entry.

#### Alternative D

1. Not identified as an SMA.

## 27. IRON MINE RIDGE

General Description: The Iron Mine Ridge SMA contains approximately 800 acres and is located northeast of Bingham, New Mexico. Steep hills and slopes within the Chupadera Mesa characterize the area. Soil textures are of a loam within layers of gypsum material. Surface materials range from gravelly to cobbly. The vegetation aspect of the area is pinyon-juniper. Other common vegetation species include mountain mahogany, skunkbush sumac, sideoats grama, black grama, New Mexico feathergrass, and threeawn.

The area was nominated by the NMDNR and the Nature Conservancy for special management because of several species of rare and endemic plants that occur in the area. These species include Wrights spiderlily (Tradescantia Wrightii), desert parsley, (Pseudocymopterus longiradiatus), and threadleaf false carrot (Aletes filifolius) and State sensitive species.

Management Goals: Iron Mine Ridge SMA will be managed to maintain or improve the habitat for State sensitive, rare and endemic plants occurring within the area.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

800 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 4.
4. Close to woodcutting.
5. Restrict mineral material disposals.

#### Alternative C

800 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Close to woodcutting.
5. Exclude mineral material disposals.
6. Designate as an ACEC.

#### Alternative D

1. Not identified as an SMA.



## 28. TAYLOR CANYON

General Description: The Taylor Canyon SMA contains approximately 320 acres, and is located east of Bingham, New Mexico. Steep hills and footslopes characterize the topography of the land. Surface soil textures vary from a loam to clay loam and are generally stony, gravelly or cobbly. Vegetation on the slopes includes pinyon, juniper, skunkbush sumac, oak, mountain mahogany, sideoats grama, black grama, New Mexico feathergrass, threeawn, blue grama, and other species.

The area was nominated by the Nature Conservancy and the NMDNR for special management because several species of rare and endemic plants occur in these habitats. These species include threadleaf horsebrush (Tetradymia filifolia) and gypsum blazing star (Mentzelia perrenis), both sensitive State species; and Payson's hidden flower (Cryptantha paysonii), a species of special concern.

Management Goals: Management of the Taylor Canyon SMA will be to maintain or improve the habitat for State sensitive, rare and endemic plants occurring within the area.

## Planned Actions:

### Alternative A

1. Not identified as an SMA.

### Alternative B

320 Acres

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 1.
4. Restrict mineral material disposals.

### Alternative C

320 Acres

1. Close to motor vehicle use.
2. Exclude authorization for ROWs and leases.
3. Fluid Leasing Stipulation No. 3.
4. Exclude mineral material disposals.
5. Designate as an ACEC.

### Alternative D

1. Not identified as an SMA.

## 29. HARVEY PLOT

General Description: The Harvey Ecological Plot SMA is located northeast of Bingham, New Mexico on Chupadera Mesa Allotment, No. 1368. Soils on the site are usually shallow over limestone although deep pockets may exist.

The 3-acre study plot was established in 1962 by the BLM. Its purpose was to provide information to determine the effect of rodents on native vegetation as well as study the ecology of range for rainfall and soil types.

Vegetation on the area includes, juniper, skunkbush sumac, black grama, sideoats grama, blue grama, New Mexico feathergrass and other species.

Management Goals: The Harvey Plot SMA will be managed to provide vegetative use data for future scientific use.

### Planned Actions:

#### Alternative A

1. Not identified as an SMA.

#### Alternative B

##### 3 Acres

1. Withdraw from locatable mineral entry.
2. Limit motor vehicle use to existing roads and trails.
3. Restrict authorizations for ROWs and leases.
4. Fluid Leasing Stipulations No. 1.

#### Alternative C

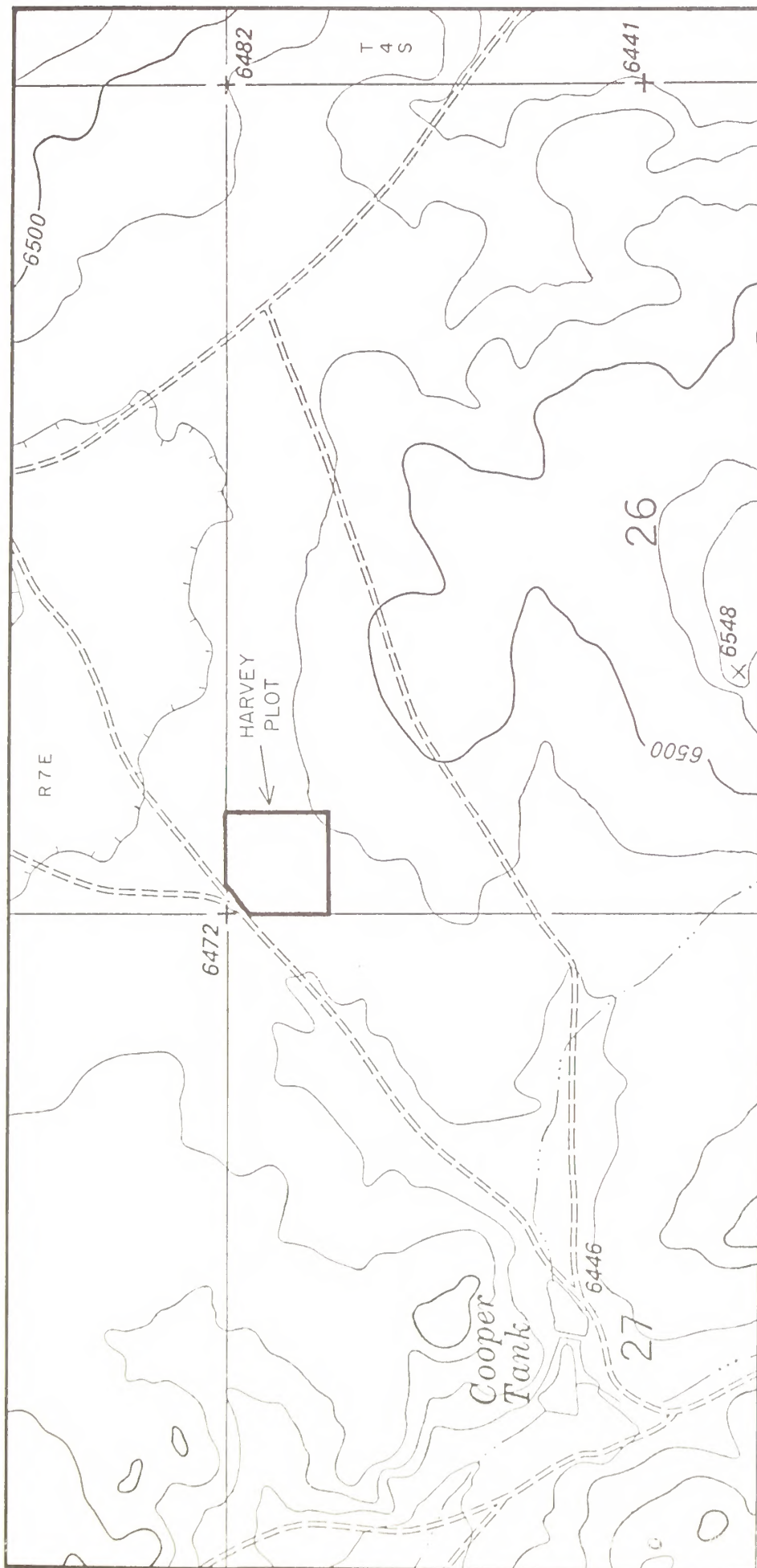
##### 3 Acres

1. Withdraw from locatable mineral entry.
2. Close to motor vehicle use.
3. Exclude authorizations for ROWs and leases.
4. Fluid Leasing Stipulation No. 3.
5. Designate as ACEC.

#### Alternative D

1. Not identified as an SMA.





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# HARVEY PLOT SPECIAL MANAGEMENT AREA



### 30. ZUNI SALT LAKE

General Description: Zuni Salt Lake is a location of traditional religious significance to the Zuni Tribe and to other Native American groups in the Southwest. The Lake itself lies in a volcanic water and contains highly saline water which has been utilized since prehistoric times. The Lake was returned to Zuni ownership by an act of Congress in 1984, and is surrounded largely by lands managed by the BLM. These surrounding lands contain cultural resources of both archeological and socio-cultural importance which warrant special management attention for Federal undertakings in the vicinity of the lake.

Management Goals: Zuni Salt Lake SMA will be managed to protect socio-cultural values and cultural resources.

#### Planned Actions:

##### Alternative A

1. Not identified as an SMA.

##### Alternative B

5,760

1. Limit motor vehicle use to existing roads and trails.
2. Restrict authorization of ROWs and leases.
3. Restrict mineral material disposals.
4. Fluid Leasing Stipulation No. 1.
5. Restrict geophysical operations.

##### Alternative C

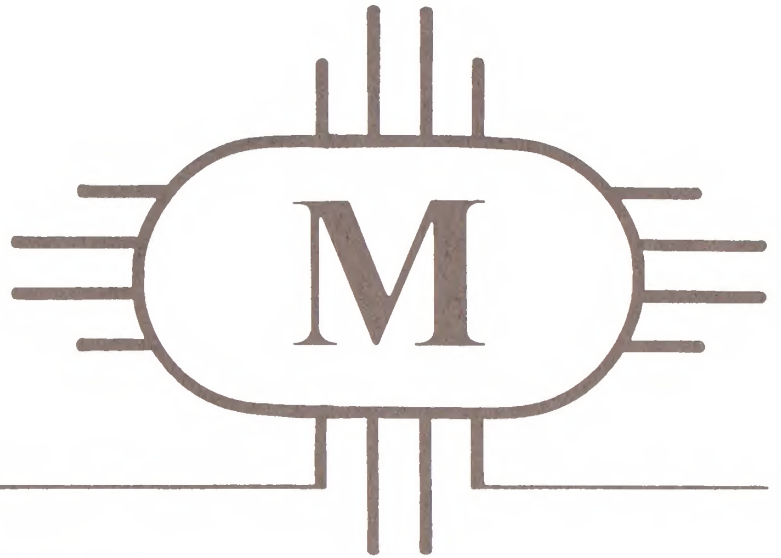
5,760

1. Limit motor vehicle use to existing roads and trails.
2. Exclude authorization of ROWs and leases.
3. Exclude mineral material disposals.
4. Close to fluid leasing.

##### Alternative D

1. Not identified as an SMA.





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Federal Coal Lands Review Process

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## FEDERAL COAL LANDS REVIEW AND IMPACT ANALYSIS PROCESS

### INTRODUCTION

The regulations set forth in Title 43 of the Code of Federal Regulations (CFR), Subpart 3400, provide the framework under which the Department of the Interior (hereinafter referred to as the Department) conducts leasing of the rights to extract Federal coal. The objectives of these regulations are to establish policies and procedures for considering development of coal deposits through a leasing system involving land-use planning and environmental impact analysis. Additionally, the regulations are intended to ensure that coal deposits are developed in consultation, cooperation, and coordination with the public, State and local governments, Indian tribes, and involved Federal agencies.

The Secretary of the Interior may not hold a lease sale unless the lands containing the coal deposits have been included in a comprehensive land-use plan and unless the sale is compatible with, and conforms to, any relevant stipulations, guidelines and standards set out in the plan.

More detailed information on the area can be found in the Draft Divide Management Framework Plan (MFP) Amendment [Bureau of Land Management (BLM) 1984] at the BLM office in Socorro, New Mexico. It should be noted that once all four land-use planning screens for coal (coal development potential, surface owner consultation, unsuitability criteria and multiple-use screens) are applied to the area, the remaining Federal lands contained therein will be carried forward for impact analysis by alternative. Figure M-1 describes the screen application process. Once the resource management plan (RMP) is completed, those lands that are identified under the preferred alternative as acceptable for further leasing consideration will serve as a pool from which tracts will be delineated. These tracts will undergo further analysis before being offered for leasing.

## APPLICATION OF THE LAND-USE PLANNING SCREENS COAL DEVELOPMENT POTENTIAL

The coal development potential screen identifies lands suitable for further consideration for leasing for coal development within the planning cycle, which is assumed to be ten to twenty years. The coal development potential screen has been applied to the San Augustine Coal Area (SACA).

The determination of the area of maximum coal development potential is based on the following criteria:

1. Strippable reserve-base - a correlatable coal seam at least 2.3 feet thick, deeper than 20 feet and shallower than a 15 to 1 stripping ratio, with a maximum depth of 250 feet.
2. Underground mineable reserve-base - a correlatable seam at least 5 feet thick and beyond the 15 to 1 stripping ratio limit.

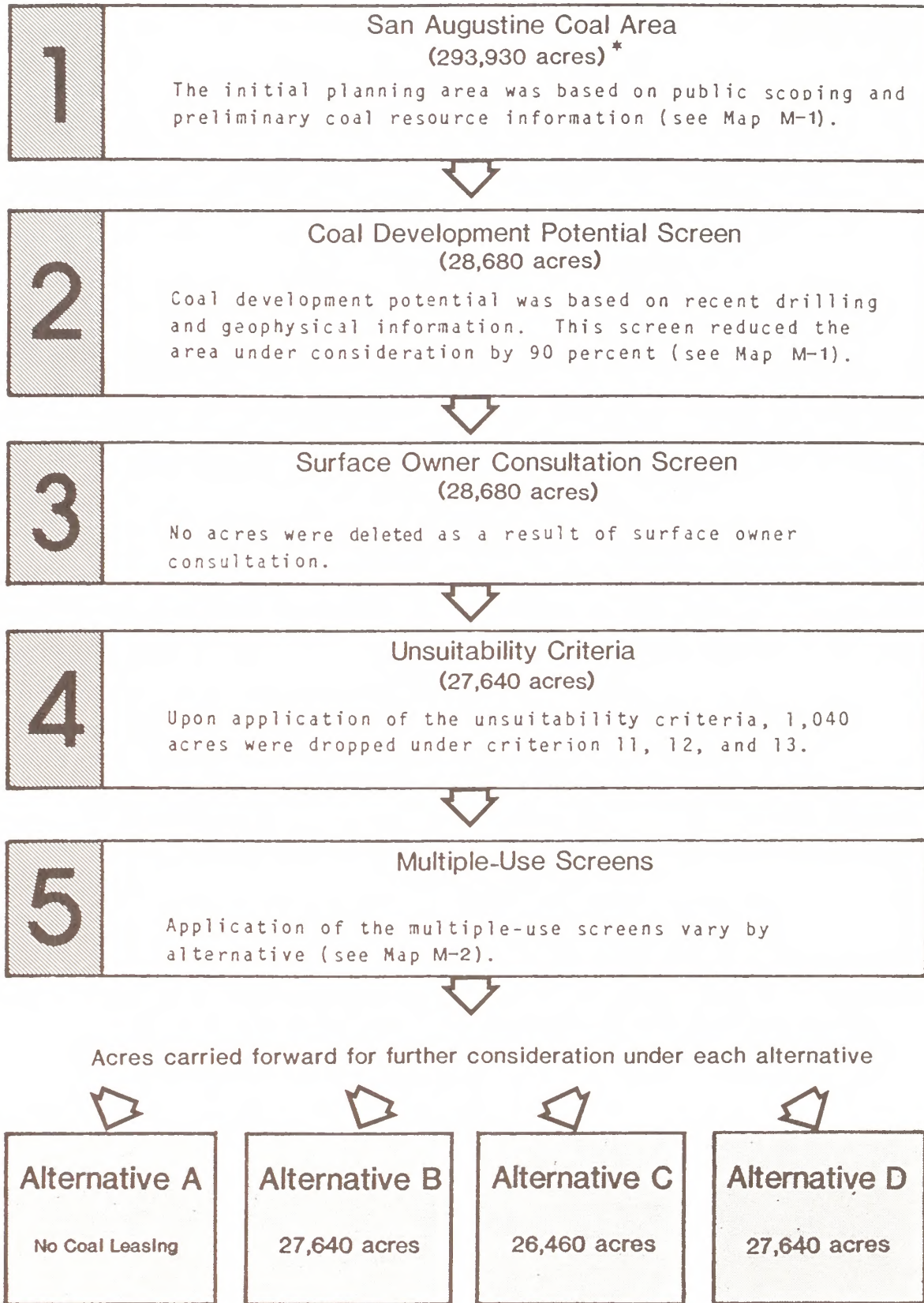
All discernible areas meeting these criteria, plus a number of small areas with greater than a 15 to 1 stripping ratio, and areas of underground mineable reserve-base are included in the area of maximum coal development potential for the SACA.

The coal data used to determine the area of maximum coal development potential included geophysical well logs and other bore-hole data from drilling programs conducted on State, private, and Federal land by the New Mexico Bureau of Mines and Mineral Resources (NMBMMR) and two energy companies. A cursory examination of the coal seam intercepts in each hole was made and the drill hole stripping ratio (defined as feet of overburden per foot of strippable coal) was determined. Coal seams were correlated and geologic cross sections were made. No overburden or coal seam isopack (thickness) maps were made.

As a result of application of the coal development potential screen, the maximum coal development potential area was identified and is depicted in Map M-1. The remaining land use planning screens were applied to this area.

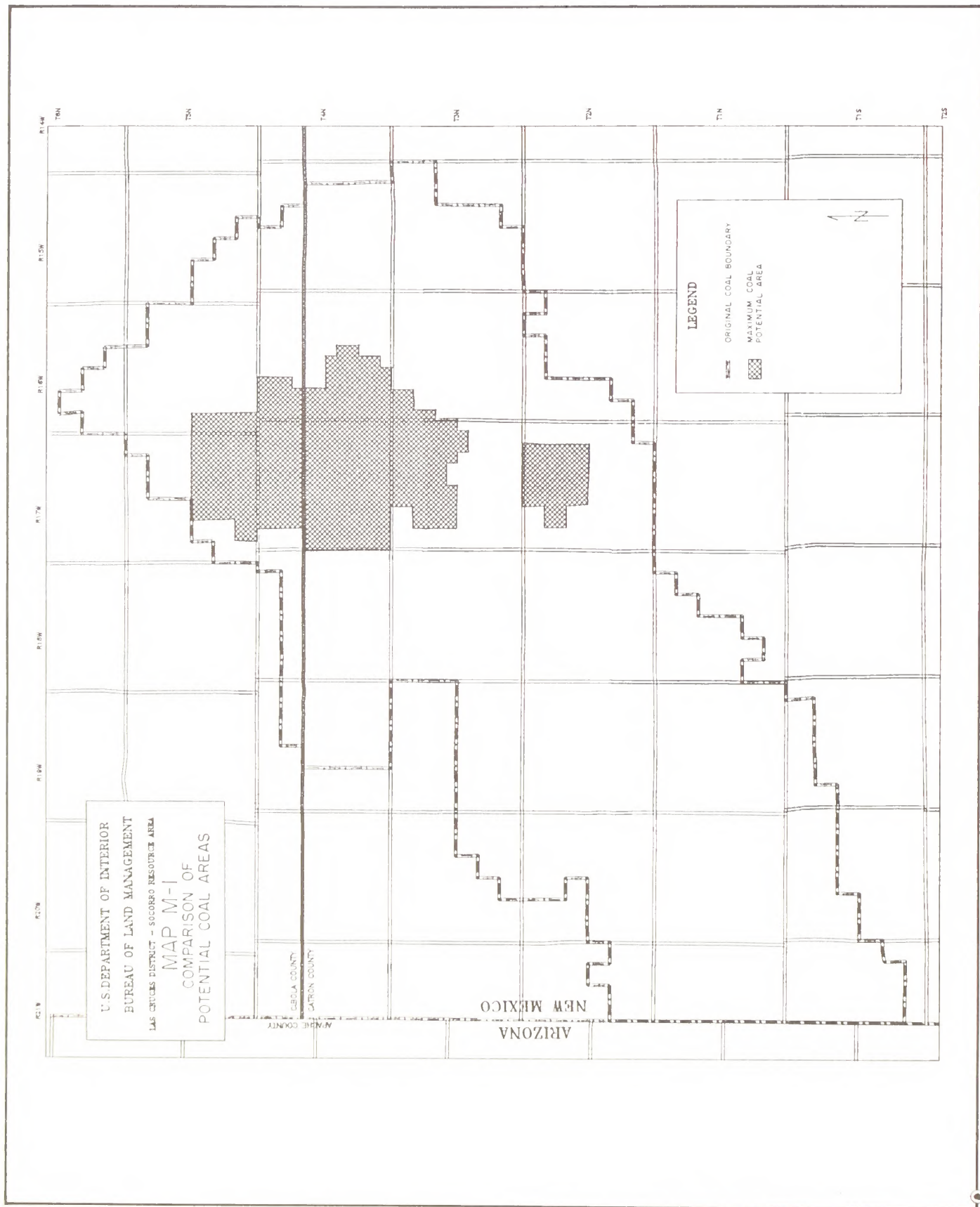
FIGURE M-1

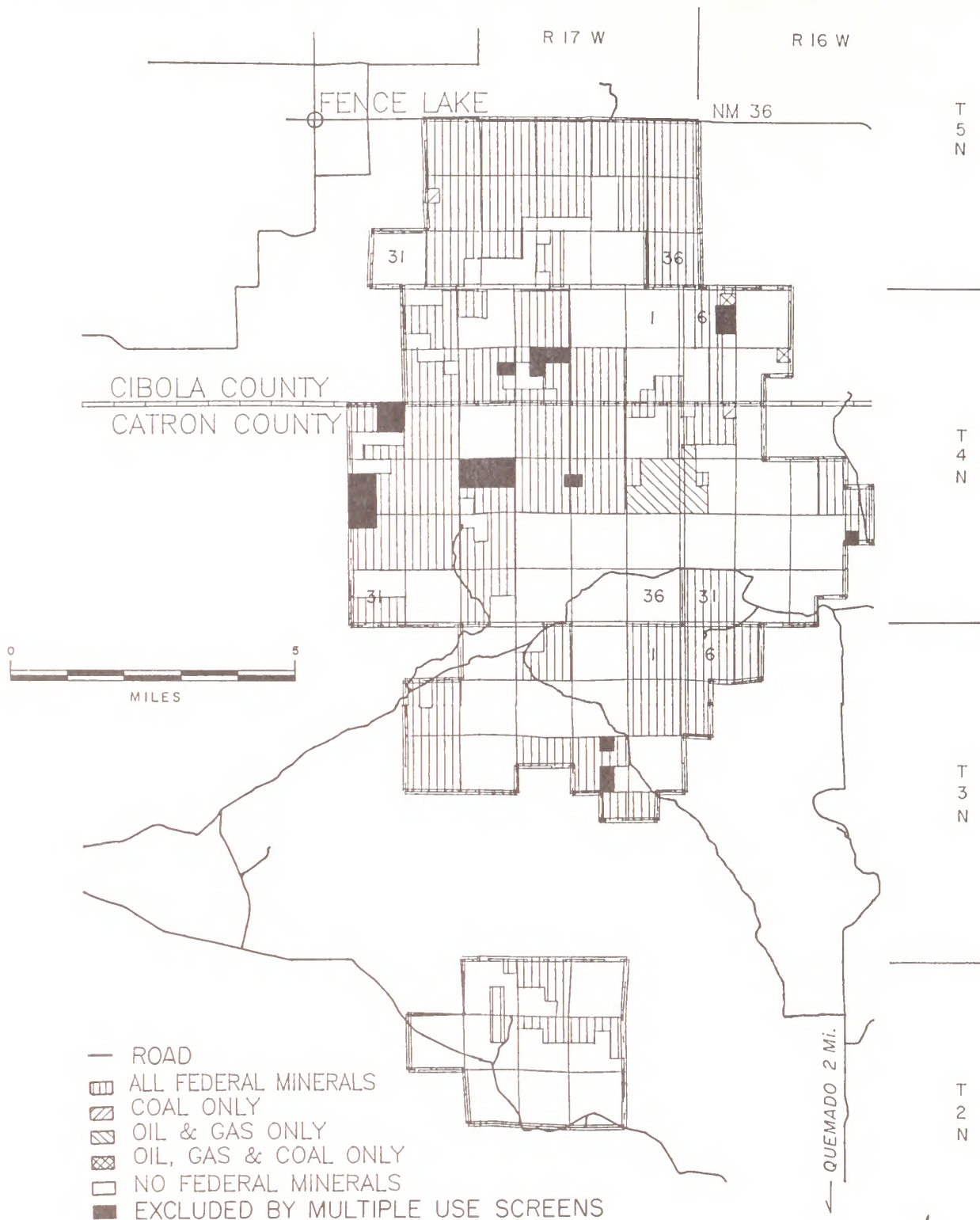
Application of Coal Land-Use Planning Screens for Impact Analysis



\* All acre figures represent the affected Federal coal







U.S. DEPARTMENT OF INTERIOR  
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**MAP M-2**  
 SAN AUGUSTINE COAL AREA  
 MAXIMUM COAL DEVELOPMENT POTENTIAL AREA  
 LAND USE PLANNING SCREENS



## SURFACE OWNER CONSULTATION

Consultation with surface owners has been completed within the SACA. Potential qualified surface owners have been informed of the consent and refusal to consent procedures as described in 43 CFR 3400.

The surface owner consultation process is designed to estimate the attitudes of the individuals whose lands and livelihoods may be directly affected by Federal coal leasing. This process may result in the elimination of lands for further leasing consideration if significant opposition exists. This process is preliminary to the actual surface owner consent process where an absolute determination is necessary.

A survey of the 128 surface landowners within the initial SACA was conducted to ascertain their opinions concerning coal development within the area. Generally, 49 percent of the surface owners favor coal development, 17 percent do not favor coal development, and 34 percent reflected no opinion, were undecided, or had no comment. Ten of the landowners consulted own approximately 85 percent of the private surface estates, within the area of maximum coal development potential and which have reservations of coal to the United States. Of these ten, four were supportive of future coal development. These four landowners control approximately 57 percent of the split estate acreage, in the area of maximum coal development. Only one landowner, controlling 3 percent of the acreage, opposed coal development due to anticipated environmental impacts. Three of the ten surface owners, who control approximately 34 percent of the split estate acreage, were undecided. No responses were received from the two landowners who control 6 percent of the split estate lands within the area of maximum coal development potential. As a result of our review, it was determined that the identified opposition was not significant enough to delete any of the maximum coal development areas from further consideration for leasing. It should be stressed that no Federal coal may be mined on split-estate lands until consent is formally acquired from all directly affected qualified surface owners.

## APPLICATION OF UNSUITABILITY CRITERIA

As required by the Surface Mining Control and Reclamation Act of 1977, the Department has developed criteria to determine whether public lands are unsuitable for further consideration for coal leasing. This unsuitability assessment was applied to the area identified as passing the coal development potential and surface owner consultation screens, above. In the following discussion, the results of the application of each of the unsuitability criteria and exceptions are described.

The 20 unsuitability criteria contained in 43 CFR 3461.1 were used to assess the unsuitability for mining of the SACA. The intent of the unsuitability criteria application is to identify the areas within the SACA which could not be properly protected or maintained if the area were leased for coal mining.

After initial survey of the entire 448,920 acres of the SACA, unsuitable areas, meeting specific criteria, were identified and included in the 1984 Divide Unit Resource Analysis Addendums. Following the identification and formulation of alternatives to be addressed by this RMP, affected resources within the 28,680-acre maximum coal development potential area were reexamined in light of the current set of unsuitability criteria.

## SUMMARY

The unsuitability criteria which affect lands within the SACA are displayed on the unsuitability criterion overlays 1 through 5 which are available for public review at the BLM Socorro Resource Area (SRA) Office, Socorro, New Mexico.

At this time, the area of maximum coal development potential does not contain lands meeting unsuitability Criteria No. 1, Federal Land Systems; No. 2, Rights-of-way; No. 4, Wilderness Study Areas (WSA); No. 5, Scenic Class One Lands; No. 6, Scientific Study Areas; No. 7, National Register of Historic Places; No. 8, Natural Areas; No. 9, Federal Listed Species/Habitats; No. 10, State Listed Species/Habitats; No. 17, Municipal

Watersheds; No. 18, National Resource Waters; No. 19, Alluvial Valley Floors; and No. 20, State Criteria.

Of the remaining criteria, mitigating measures have been developed which would allow lands identified as meeting Criteria No. 3, Roads and Dwellings; No. 14, High Interest Federal Species; No. 15, High Interest State Species; and No. 16, 100-year Floodplains, to be considered suitable for coal leasing. Those areas which are unsuitable under Criteria No. 11, Eagle Nests, No. 12, Eagle Roosts and No. 13, Falcon Nests will not be considered as suitable through mitigation. The acreages and tonnages of coal determined suitable and unsuitable for further consideration for leasing are exhibited in Tables M-1 and M-2. The acres which have been determined as suitable upon execution of mitigating measures are shown by criteria in Table M-3.

TABLE M-1  
Coal Acreages Brought Forth Under Each  
Alternative

Alternative				
A	B	C	D	
0	28,680	28,680	28,680	Total acreage within maximum coal development potential area.
0	400	400	400	Acreage unsuitable criterion:
0	160	160	160	No. 11, Eagle Nests
0	480	480	480	No. 12, Eagle Roosts
0	0	1,340	0	No. 13, Falcon Nests
0	27,640	26,460	27,640	Acreage unsuitable multiple-use screens. *
0	27,640	26,460	27,640	Total acreage suitable for further consideration for leasing.

\* 160 acres of the area, dropped under the multiple-use screen, coincides with lands unsuitable under Criterion No. 13, Falcon Nests.

### 3461.1 (a)(1) Criterion Number 1

All Federal lands included in the following land systems or categories shall be considered unsuitable: National Park System, National Wildlife Refuge System, National System of Trails, National Wilderness Preservation System, National Wild and Scenic Rivers System, National Recreation Areas, lands acquired with money derived from the Land and Water Conservation Fund, National Forests, and Federal lands in incorporated cities, towns, and villages.

There are no Federal lands systems within the SACA; therefore, this criterion does not apply.

TABLE M-2  
Estimated Coal Tonnage Brought Forth Under  
Each Alternative (Stripable/Underground  
Reserves in Millions of Tons)

Alternative				
A	B	C	D	
90/130	90/130	90/130	90/130	Total tonnage within maximum coal development potential area.
NA	5/5	5/5	5/5	Tonnages unsuitable under criterion:
NA	0/0	7/1	0/0	No. 11, Eagle Nests, No. 12, Eagle Roosts, No. 13, Falcon Nests
0/0	85/125	78/124	85/125	Tonnages unsuitable - multiple-use screens.
0/0	85/125	78/124	85/125	Total tonnages brought forth for further consideration for leasing.



TABLE M-3

Acreages Covered by Unsuitability Criteria  
Nos. 1 Through 20 Determined Suitable  
Upon Execution of Mitigating Measures \*

Unsuitability		
Criterion No.		Acres
3	Roads and Dwellings	10
14	High Interest Federal Species	640
15	High Interest State Species	
	Prairie Dog Habitat	600
	Mule Deer Wintering Range	80
16	100-year Floodplains	1,800
14 & 16		120

\* In addition to the above areas, there are: (1) 220 acres covered by Criterion No. 16 which coincide with lands identified as unsuitable under the multiple-use screens applied in Alternative C; (2) 40 acres covered by Criterion No. 16 which coincide with lands identified as unsuitable under both the multiple-use screens applied in Alternative C and Criterion No. 13, Prairie Falcons; (3) 60 acres covered by Criterion No. 16 which coincide with lands identified as unsuitable under Criterion No. 11, Eagle Nests; and (4) 80 acres covered by Criterion No. 16 which coincides exclusively with lands identified as unsuitable under Criterion No. 13, Prairie Falcons.

3461.1(p)(1) Criterion Number 2

Federal lands that are within rights-of-way or easements or within surface leases for residential, commercial, industrial, or other public purposes. Federally-owned surface shall be considered unsuitable.

There are no Federal lands rights-of-way or easements in the maximum coal development potential area; therefore, this criterion does not apply.

3461.1(c)(1) Criterion Number 3

Federal lands affected by section 522(e)(4) and (5) of the Surface Mining Control and Reclamation Act of 1977 shall

be considered unsuitable. This includes lands within 100 feet of the outside line of the right-of-way of a public road or within 100 feet of a cemetery, or within 300 feet of any public building, school, church, community or institutional building or public park or within 300 feet of an occupied dwelling.

Presently there is only one dwelling located on Federal lands within the area of maximum coal development potential. This dwelling is occupied and is displayed on Unsuitability Criterion Overlay No. 1. No cemeteries, including single grave sites, have been identified within the area under review. A legal description of this land is included in the Divide Unit Resource Analysis Addendum (Step 3. Lands, .41).

Exceptions - Lands within the area of maximum coal development potential which are affected by this criterion can be considered suitable for further coal lease consideration with the following stipulations:

1. The lessee will consult with all owners of occupied dwellings and maintain or, with the owner's consent, adjust the designated 300-foot buffer zone.

3461.1(d)(1) Criterion Number 4

Federal lands designated as wilderness study areas shall be considered unsuitable while under review by the Administration and the Congress for possible wilderness designation. For any Federal land which is to be leased or mined prior to completion of the wilderness inventory by the surface management agency, the environmental assessment or impact statement on the lease sale or mine plan shall consider whether the land possesses the characteristics of a wilderness study area. If the finding is affirmative, the land shall be considered unsuitable, unless issuance of noncompetitive coal leases and mining on leases is authorized under the Wilderness Act and the Federal Land Policy and Management Act of 1976.

There are no WSAs in the maximum coal development potential area; therefore, this criterion does not apply.

3461.1(e)(1) Criterion Number 5

Scenic Federal lands designated by visual resource management analysis as Class I (an area of outstanding scenic quality or high visual sensitivity) out not currently on the National Register of Natural Landmarks shall be considered unsuitable. A lease may be issued if the surface management agency determines that surface coal mining operations will not significantly diminish or adversely affect the scenic quality of the designated area.

There are no visual resource management (VRM) Class I areas in the maximum coal development potential area; therefore, this criterion does not apply.

3461.1(f)(1) Criterion Number 6

Federal lands under permit by the surface management agency, and being used for scientific studies involving food or fiber production, natural resources, or technology demonstrations and experiments shall be considered unsuitable for the duration of the study, demonstration or experiment, except where mining could be conducted in such a way as to enhance or not jeopardize the purposes of the study, as determined by the surface management agency, or where the principal scientific user or agency gives written concurrence to all or certain methods of mining.

The maximum coal development potential area does not contain lands being utilized for this purpose.

3461.1(g)(1) Criterion Number 7

All publicly and privately owned places on Federal lands which are included in the National Register of Historic Places shall be considered unsuitable. This shall include any areas that the surface management agency determines, after

consultation with the Advisory Council on Historic Preservation and the State Historic Preservation Officer (SHPO), are necessary to protect the inherent values of the property that made it eligible for listing in the National Register.

Although it is interpreted that this also includes privately-owned archaeological sites above Federal coal, no lands within the maximum coal development potential area meet this criterion. Several archaeological sites do exist within the suitable area which are significant and which may be eligible for listing on the National Register of Historic Places.

NOTE: These archaeological sites and socio-cultural sites clearly meet the definition of a resource of a unique nature with local or regional importance. These sites are considered under the multiple-use screen.

3461.1(h)(1) Criterion Number 8

Federal lands designated as natural areas or as National Natural Landmarks shall be considered unsuitable.

The maximum coal development potential area does not contain lands designated as natural areas or National Natural Landmarks.

3461.1(i)(1) Criterion Number 9

Federally designated critical habitat for threatened or endangered plant and animal species, and habitat for Federal threatened or endangered species which is determined by the Fish and Wildlife Service and the surface management agency to be of essential value and where the presence of threatened or endangered species has been scientifically documented, shall be considered unsuitable.

At this time, the maximum coal development potential area does not contain Federally designated critical habitat for threatened or endangered (T&E) plant and animal species or habitat for T&E species determined to be of



essential value by the Fish and Wildlife Service (FWS) and the surface management agency.

3461.1(j)(1) Criterion Number 10

Federal lands containing habitat determined to be critical or essential for plant or animal species listed by a State pursuant to State law as endangered or threatened shall be considered unsuitable.

At this time, the maximum coal development potential area does not contain Federal lands containing habitat determined to be critical or essential for plant or animal species listed by the State of New Mexico as T&E.

3461.1(k)(1) Criterion Number 11

A bald or golden eagle nest or site on Federal lands that is determined to be active and an appropriate buffer zone of land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Eagle nesting habitat located within the SACA was surveyed during the summer/fall of 1983. A Raptor Nest Report was initiated for each nest or group of nests located. Tentative buffer zones were identified and are displayed on the Unsuitability Criterion Overlay No. 4. A listing of legal descriptions of these tentative buffer zones is included in the Divide Unit Resource Analysis Addendum (Step 3, Wildlife .46). Following a nesting survey conducted during the spring of 1987, those locations identified as active were retained on the unsuitability criterion overlay. The acreages identified as unsuitable (400 acres) are exhibited in Table M-1.

Additional spring surveys are conducted within the maximum coal development potential area yearly. Results of these surveys may change the amount of Federal mineral estate determined unsuitable because of this criterion.

Exception - The BLM with concurrence from the FWS, has determined that mitigating measures are neither practical nor desirable at this time.

3461.1(l)(1) Criterion Number 12

Bald and golden eagle roost and concentration areas on Federal lands used during migration and wintering shall be considered unsuitable.

Year-round eagle roosting areas have been identified within the maximum coal development potential area and are displayed on the Unsuitability Criterion Overlay No. 4. A listing of legal descriptions of these roosting areas is included in the Divide Unit Resource Analysis Addendum (Step 3, Wildlife .46). The acreages identified as unsuitable (160 acres) under this criterion are exhibited in Table M-1.

Exceptions - The BLM with concurrence from the FWS has determined that mitigating measures are neither practical nor desirable at this time.

3461.1(m)(1) Criterion Number 13

Federal lands containing a falcon (excluding kestrel) cliff nesting site with an active nest and a buffer zone of Federal land around the nest site shall be considered unsuitable. Consideration of availability of habitat for prey species and of terrain shall be included in the determination of buffer zones. Buffer zones shall be determined in consultation with the Fish and Wildlife Service.

Falcon nesting habitat located within the maximum coal development potential area was surveyed during the summer/fall of 1983. A Raptor Nest Report was initiated for each nest or suspected nest located. Tentative buffer zones were identified and are displayed on the Unsuitability Criterion Overlay No. 4. A listing of legal descriptions of these tentative buffer zones is included in the Divide Unit Resource Analysis Addendum (Step 3, Wildlife .46). Following a nesting survey

conducted during the spring of 1987, those locations determined to be active were retained on the unsuitability criterion overlay. The acres identified as unsuitable (480 acres) under this criterion are exhibited in Table M-1.

Additional spring surveys are conducted within the maximum coal development potential area yearly. Results of these surveys may change the amount of Federal mineral estate determined unsuitable because of this criterion.

Exceptions - The BLM, with concurrence from the FWS, has determined that mitigating measures are neither practical nor desirable at this time.

#### 3461.1(n)(1) Criterion Number 14

Federal lands which are high priority habitat for migratory bird species of high Federal interest on a regional or national basis, as determined jointly by the surface management agency and the Fish and Wildlife Service, shall be considered unsuitable.

High priority habitat is defined as an area containing one or more limited environmental factors needed to support a population of at least one of the listed species. All high priority habitat must meet the following criteria:

1. It must be used regularly (use may be limited to one season during the year) by one or more of the listed species.

2. Its availability for uses such as feeding, reproduction, nesting, molting and/or wintering must be either limited or supportive of concentrations of a listed species in the indicated coal region or subregion.

3. It must contain a combination of natural or man-made factors; eg., riparian vegetation, reservoirs, cliff sites, tall buildings, etc. . . . that provide an essential quantity or quality of one or more of the habitat requirements of a listed species; i.e., food, water, cover or space.

In order to assess an area as being unsuitable for all or certain stipulated methods of coal mining, both the "high Federal interest" and the "high priority habitat" aspects of this criterion must be met; eg., an area must support listed species and contain habitat of these species which meet all three of the above indicated habitat criteria.

The areas identified as meeting criterion number 14 are identified on the Unsuitability Overlay No. 4. A description and listing of locations of these areas are included in the Divide Unit Resource Analysis Addendum (Step 3, Wildlife .46). These areas are intermittent wetlands, playas or reservoirs which contain water during the spring and early summer, produce forbs during the summer, and contain water during the fall and winter. These areas are known to be utilized during the spring and fall migrations by: white-faced ibis, western grebe, great blue heron, long-billed curlew and large concentrations of migratory waterfowl which provide a prey base for wintering bald eagles. At this time no Ferruginous hawk nest locations are known to occur on Federal mineral estate within the maximum coal development potential area. Additional surveys will be conducted within the maximum coal development potential area yearly. Results of these surveys may change the amount of Federal mineral estate determined unsuitable because of this criteria.

Exceptions - The 640 acres identified as meeting criterion 14 within the maximum coal development potential area can be considered suitable for further coal lease consideration by applying the following stipulations:

1. Affected wetlands and appropriate drainages sufficient to provide equal or enhanced habitat values will be replaced by the lessee on a site-specific basis.

2. The lessee will consult with the BLM; the BLM will consult with the surface owner, FWS and New Mexico Department of Game and Fish (NMDG&F) prior to alteration of the affected wetland.



3461.1(o)(1) Criterion Number 15

Federal lands which the surface management agency and the State jointly agree are fish and wildlife habitat for resident species of high interest to the State and which are essential for maintaining these priority wildlife species shall be considered unsuitable.

The areas identified under criterion number 14 can also be applicable to criterion 15; in addition, the NMDG&F has identified prairie dogs (as being indicators of potential black-footed ferret habitat), mule deer and ferruginous hawks. Pronghorn antelope are included under this criterion because of the occurrence of an isolated herd utilizing a restricted habitat on a mesa top in the area.

Areas identified as mule deer winter range within the maximum coal development potential area are also adjacent to or included in the areas covered by criterion 12 - eagle roosting areas. Prairie dog habitat (600 acres) and mule deer wintering range (80 acres) are included under this criterion.

Those areas identified under criterion 14 are included in the exception for that criterion.

Exceptions - The areas identified as prairie dog locations will be suitable for further coal lease consideration by incorporating the following stipulations:

1. Proposed activities in or adjacent to the identified area will be preceded by a complete black-footed ferret inventory of the prairie dog colony.
2. All black-footed ferret inventory and survey procedures conducted by the lessee will be reviewed and approved by BLM, in consultation with the FWS and the NMDG&F.

3461.1(p)(1) Criterion Number 16

Federal lands in riverine, coastal and special floodplains (100-year recurrence interval) on which the surface management agency determines that mining could not be undertaken without substantial threat

of loss of life or property shall be considered unsuitable for all or certain stipulated methods of coal mining.

The first drainages that were analyzed for 100-year floodplain determination were those that drained at least ten square miles. Watersheds were delineated for all of SACA and tentative floodplain transect locations established. Two or more transects were run for each probable floodplain location using the stadia method. Channel cross sections were drawn and flood stages marked on them. The United States Geological Survey (USGS) method from Water Resources Investigations 82-24, "Techniques for Estimated Flood Discharges for Unregulated Streams in New Mexico", and H. R. Hejl, Jr.'s (USGS) draft paper "Streamflow Characteristics as Related to Basin Characteristics in Strippable Coal-Resource Areas of Northwestern New Mexico" were used to determine the 100-year flood discharge. The resultant discharges computed using the two different methods were very close. Using the Manning's equation and knowing the channel geometry and stage relationship, the 100-year floodplain was then determined and drawn on 7.5 minute topographic maps. The floodplains were later verified with aerial photographs. To accurately determine the 100-year floodplain, USGS said that about 20 floodplain transects per area are needed and the floodplains should be mapped on one-foot contour interval maps. Due to the tight budget, large area, and lack of manpower, it was not possible to delineate the floodplains to that degree of accuracy.

Playas were delineated by aerial photo interpretation, vegetative types, and field observations. Four large detention dams that hold between 55 and 152 acre-feet of water were also considered unsuitable.

Although the 1,800 acres delineated as floodplains are blocked out in 40-acre tracts, the actual floodplain usually represents a much smaller area. Actual floodplain boundaries have been digitized and maps are available for reviewing at the SRA.

Floodplains are displayed on Unsuitability Criteria Overlay No. 5. All of the 100-year

occurrence floodplains in the maximum coal development potential area can be mitigated because they do not represent a substantial threat to life or property.

3461.1(q)(1) Criterion Number 17

Federal lands which have been committed by the surface management agency to use as municipal watersheds shall be considered unsuitable.

At this time, the maximum coal development potential area does not contain any municipal watersheds.

3461.1(r)(1) Criterion Number 18

Federal lands with national resource waters, as identified by states in their water quality management plans, and a buffer zone of Federal lands 1/4 mile from the outer edge of the far banks of the water, shall be unsuitable.

At this time, the maximum coal development potential area does not contain lands identified by the State of New Mexico as meeting this criterion.

3461.1(s)(1) Criterion Number 19

Federal lands identified by the surface management agency, in consultation with the State in which they are located, as alluvial valley floors according to the definition in 3400.0-5(a) of this title, the standards in 30 CFR Part 822, the final alluvial valley floor guidelines of the Office of Surface Mining (OSM) Reclamation and Enforcement when published, and approved State programs under the Surface Mining Control and Reclamation Act of 1977, where mining would interrupt, discontinue, or preclude farming, shall be considered unsuitable. Additionally, when mining Federal land outside an alluvial valley floor would materially damage the quantity or quality of water in surface or underground water systems that would supply alluvial valley floors, the land shall be considered unsuitable.

At this time, the maximum coal development potential area does not contain lands identified as alluvial valley floors (30 CFR Chapter VII).

3461.1(t)(1) Criterion Number 20

Federal lands in a state to which is applicable a criterion (i) proposed by that state, and (ii) adopted by rule making by the Secretary, shall be considered unsuitable.

At this time, the State of New Mexico has not proposed nor has the Secretary adopted any special or additional criterion other than those criterion presented in Parts 2, 3, and 4 of the New Mexico Coal Surface Mining Commission Rule 80-1 which corresponds with segments of the Federal 3461.1 regulations.

MULTIPLE-USE CONFLICT ANALYSIS

The multiple-resource use screens are intended to eliminate lands from further consideration for coal leasing if other resources on those lands are determined to be locally important or unique. In general, a multiple-use trade-off is appropriate when one land use; e.g. mining, would be likely to preclude or limit use of other valuable resources not otherwise covered by the 20 unsuitability criteria. The readjustments at this stage in the land-use planning process are made to accommodate unique, site-specific resource values clearly superior to coal but which are not included in the unsuitability criteria. A prime recreation site or campground might be an example.

The present planning effort weighs the effects of the additional multiple-use screens on the areas which have passed the three previously mentioned screens. The results of these analyses are summarized below. It should be noted that additional inventory for cultural resources, raptor nests, etc., could require the reapplication of multiple-use and unsuitability criteria screens at coal activity planning. A total of 1,340 acres have been determined unacceptable for the multiple-use screens for Alternative C. Under Alternative B no acres were declared



unacceptable because all multiple-use screens were mitigated. Those screens which are applied are presented in Table M-1.

#### MULTIPLE-USE SCREENING ANALYSIS

##### No. 1: WETLANDS

Wetlands larger than one acre will be considered unacceptable.

DEFINITION: BLM Manual 6740 defines wetlands as follows:

"Permanently wet or intermittently flooded areas where the water table (fresh, saline, or brackish) is at, near, or above the soil surface for extended intervals, where hydric wet soil conditions are normally exhibited, and where water depths generally do not exceed two meters. Vegetation is generally comprised of emergent water-loving forms (hydrophytes) which require at least a periodically saturated soil condition for growth and reproduction. In certain instances vegetation may be completely lacking. Marshes, shallows, swamps, muskegs, lake bogs, and wet meadows are examples of wetlands."

These are poorly drained areas, as a rule having impervious soils (no substantial ground water recharge). They may on occasion be in contact with the groundwater system, but for the most part they receive water from precipitation and overland runoff.

The above definition will be used for the multiple-use screen with the following modification. Marshes, shallows, swamps, and wet meadows less than one acre will not be considered under this definition. It will not include saltgrass flats associated with intermittent arroyos or small seasonally flooded livestock reservoirs that do not support emergent vegetation.

ANALYSIS: There are no wetlands larger than one acre in either of the areas under consideration. This analysis is based on field inventories.

##### NO. 2: RIPARIAN HABITAT

Riparian Habitat will be considered unacceptable.

DEFINITION: Manual 6740 defines riparian habitat as follows:

A specialized form of wetland restricted to areas along, adjacent to, or contiguous with perennially and intermittently flowing rivers and streams, also, periodically flooded lake and reservoir shore areas, as well as lakes with stable water levels with characteristic vegetation. This habitat is transitional between true bottomland wetlands and upland terrestrial habitats and, while associated with water courses, may extend inland for considerable distances. Soils of the riparian habitat may not exhibit typical wet soil characteristics of other wetlands. If not, wet soil characteristics will exist close enough to the surface for the water to be used directly by vegetation. This vegetation may range from water-loving hydrophytes (such as pond weeds) through terrestrial forms (such as sycamores, cottonwoods, and willows)."

In these areas soil and soil structure permit groundwater movement both vertically and horizontally. Groundwater recharge can occur.

For the purpose of the multiple-use screen the above definition will be used with the following condition: isolated cottonwood trees, tamarisk stands less than one acre, and desert arroyos with greasewood, rabbitbrush, or fourwing saltbush borders will not be considered as riparian habitat. They are more properly treated as a special habitat feature.

ANALYSIS: Using the above definition, there is no riparian habitat in any of the areas under consideration. This analysis is based on field inventories.

##### NO. 3: PROPOSED THREATENED OR ENDANGERED SPECIES (T&E)

Habitat supporting populations or individuals of species proposed for federal or state

listing as threatened or endangered will be considered unacceptable.

ANALYSIS: There are no proposed T&E species within any of the areas under consideration. This analysis is based on field inventories and consultations with the FWS and NMDG&F.

#### NO. 4: FEDERAL LANDS CONTIGUOUS TO THE NATIONAL TRAIL SYSTEM AND THE NATIONAL WILDERNESS SYSTEM

Federal lands within one-half mile of units of the National System of Trails, and the National Wilderness Preservation System, shall be considered unacceptable.

ANALYSIS: There are no Federal land systems within one-half mile of any of the areas under consideration. Therefore, this multiple-use screen will not apply.

#### NO. 5: CLASS II VISUAL RESOURCE MANAGEMENT (VRM) AREAS

Areas that contain VRM Class II objectives shall be considered unacceptable for surface coal mining.

ANALYSIS: There are no competitive coal tracts that lie within areas that contain VRM Class II management objectives.

#### NO. 6: AREAS OF SIGNIFICANT RECREATION USE OR OPPORTUNITY

Special Recreation Management Areas (SRMA) and areas that contain Recreation Opportunity Spectrum (ROS) management objective for the primitive class (see Appendix I), shall be considered unacceptable for surface coal mining.

ANALYSIS: There are no competitive coal tracts that lie within SRMA's or areas that contain the ROS Primitive class management objective.

#### NO. 7: SOLE-SOURCE AQUIFERS

An area formally designated by the Environmental Protection Agency (EPA) as a sole-source aquifer shall be considered unacceptable.

ANALYSIS: The sole-source aquifer program under the Safe Drinking Water Act permits citizens to petition EPA for designation of an area as a sole-source aquifer if it is the principal water supply. If so designated, EPA reviews all Federally assisted projects which may affect the quality of groundwater in the sole-source aquifer.

There have been no sole-source aquifer designations in the maximum coal development potential area under this program to date.

#### NO. 8: AIR QUALITY

Lands within 15 miles of air quality Class I Prevention of Significant Deterioration (PSD) areas shall be considered unacceptable.

ANALYSIS: There are no Class I (PSD) areas within or adjacent to the maximum coal development potential area.

#### NO. 9: RESERVED FEDERAL LANDS

All Federal lands included in the following land systems or categories shall be considered unacceptable: Federal Aviation Administration (FAA) facilities; all site withdrawals (administrative, school, etc.) for Federal agencies and leases acquired under the Recreation and Public Purposes (R&PP) Act.

ANALYSIS: There are no Federal lands within the maximum coal development potential area under consideration which are reserved for FAA facilities, site withdrawals for Federal agencies (administrative, school, etc.) or leases acquired under the R&PP Act.

EXCEPTION: A lease may be issued and mining operations approved if, after consultation with the affected Federal agency or lessee, the surface management agency determines that the facility will not be adversely affected by all or certain stipulated methods of coal mining.

#### NO. 10: RIGHT-OF-WAY WINDOWS OR CORRIDORS

Federal lands which have been committed by the surface management agency to use as rights-of-way windows or corridors shall be considered unacceptable.



ANALYSIS: No Federal lands which have been designated, or recommended for designation, as rights-of-way windows or corridors are within the areas under consideration.

#### NO. 11: PALEONTOLOGICAL RESOURCES

Any paleontological resources which are type localities for fauna that define regional or larger time-stratigraphic units, and special management areas (SMA) set aside for their paleontological values, shall be considered unacceptable. However, coal mining can be allowed if the authorized office (in consultation with affected Federal/State agencies) determines that mining activities will enhance and facilitate access and scientific evaluation of paleontological resources.

ANALYSIS: This multiple-use screen does not apply to any areas under consideration with the maximum coal development potential area.

#### NO. 12: CULTURAL RESOURCE SITES ELIGIBLE FOR INCLUSION ON THE NATIONAL REGISTER OF HISTORIC PLACES.

All properties which have been determined eligible for the National Register of Historic Places and which are of exceptional complexity, or areas of properties which must be considered together to achieve adequate mitigation through data recovery shall be considered unacceptable. This shall include areas that the surface managing agency determines, after consultation with the SHPO and the Advisory Council on Historic Preservation, are necessary to protect the inherent values of the property that made it eligible for the National Register.

Prior to approval of surface disturbing activities, Class III inventories will be conducted and subsequent mitigation of impacts will be required on all National Register eligible sites. Consultation between BLM,

OSM, and SHPO will occur to determine if newly recorded sites are eligible for inclusion in the National Register. If adequate mitigating measures for impacts to these sites cannot be developed, the sites and appropriate buffer zones will not be surface mined or allowed to be disturbed by underground mining activities.

ANALYSIS: No individual sites of extraordinary internal complexity are presently known within the maximum coal development potential area. However, eleven areas of properties which together pose exceptional challenges to adequate mitigation are known. These total 1,340 acres unacceptable for coal mining.

EXCEPTIONS: Coal mining may be allowed if, after consultation with the SHPO and the Advisory Council on Historic Preservation, measures for mitigation of impacts are approved by the surface managing agency and, where appropriate, the agency or landowner with jurisdiction over the site(s).

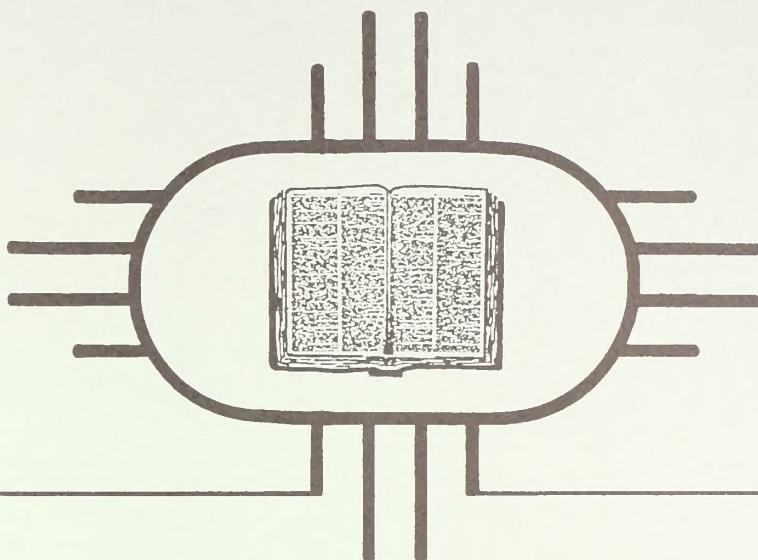
#### NO. 13: NATIVE AMERICAN AREAS OF CULTURAL SIGNIFICANCE

Federal lands containing specific sites which have been identified as sacred and essential to the practice of traditional Native American religion shall be considered as unacceptable. This shall also include any areas that the surface management agency determines, after consultation with the appropriate tribal representative, as necessary to protect the inherent values of the area and to ensure that the natural character of the area remains unaltered so it may continue to be used for prayer or other religious practices.

ANALYSIS: An overview of Native American traditional use of the original SACA region (Kelly in Camilli et al. n.d.) has shown that this screen may apply to sites, localities, and linear features (trails). No confirmed localities are presently known to lie in the maximum potential coal development area.







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## GLOSSARY

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ACEC	Area of Critical Environmental Concern	NMDNR	New Mexico Department of Natural Resources
ACHP	Advisory Council on Historic Preservations	NMIMT	New Mexico Institute of Mining and Technology
AIRFA	American Indian Religious Freedom Act	NMSHD	New Mexico State Highway Department
AMP	Allotment Management Plan	NMSO	New Mexico State Office
AMSL	Above Mean Sea Level	NOI	Notice of Intent
ARPA	Archeological Resources Protection Act	NORA	Notice of Realty Action
AT	Access Tract	ONA	Outstanding Natural Area
AUM	Animal Unit Months	ORV	Off-Road Vehicle
B/C	Benefit Cost	PILT	Payment in Lieu of Taxes
BEA	Bureau of Economic Analysis	PMOA	Programmatic Memorandum of Agreement
BIA	Bureau of Indian Affairs	PRIA	Public Rangeland Improvement Act
BLM	Bureau of Land Management	PRLA	Preference Right Lease Application
CEQ	Council on Environmental Quality	PSD	Prevention of Significant Deterioration
CFR	Code of Federal Regulations	RAMP	Recreation Area Management Plan
C&MU	Classification and Multiple Use	RAP	Resource Area Profile
CMA	Cooperative Management Agreement	R&PP	Recreation and Public Purposes
CRMP	Cultural Resource Management Plan	RMP	Resource Management Plan
EA	Environmental Assessment	RN	Roaded Natural
EIS	Environmental Impact Statement	RNA	Research Natural Area
EMS	Existing Management Situation	ROS	Recreation Opportunity Spectrum
EPA	Environmental Protection Agency	SACA	San Augustine Coal Area
ES	Environmental Statement	SCORP	Statewide Comprehensive Outdoor Recreation Plan
ESA	Endangered Species Act	SHPO	State Historic Preservation Officer
ESP	Experimental Stewardship Plan	SHS	Standard Habitat Site
FAA	Federal Aviation Administration	SMA	Special Management Area
FLPMA	Federal Land Policy and Management Act	SPM	Semi-Primitive Motorized
FS	Forest Service	SPNM	Semi-Primitive Nonmotorized
FWS	Fish and Wildlife Service	SRA	Socorro Resource Area
GS	Grazing System	SRMA	Special Recreation Management Area
HMP	Habitat Management Plan	SRP	Salt River Project
HRM	Holistic Resource Management	SSF	Soil Surface Factors
JPA	Joint Powers Agreement	SWA	Site Write-Up Area
KGRA	Known Geothermal Resource Area	SWEPI	Shell Western Exploration and Production Incorporated
KGS	Known Geological Structure	T&E	Threatened or Endangered
MFP	Management Framework Plan	TDS	Total Dissolved Solids
MFPA	Management Framework Plan Amendment	URA	Unit Resource Analysis
MLRA	Major Land Resource Area	USDA	United States Department of Agriculture
MOU	Memorandum of Understanding	USDI	United States Department of Interior
MRG	Middle Rio Grande	USGS	United States Geological Survey
MRGORP	Middle Rio Grande Occupancy Resolution Program	VRM	Visual Resource Management
MSA	Management Situation Analysis	WAR	Wilderness Analysis Report
NEPA	National Environmental Policy Act	WHMA	Wild Horse Management Area
NHPA	National Historic Preservation Act	WHMP	Wild Horse Management Plan
NIIMS	National Interagency Incident Management System	WSA	Wilderness Study Area
NMBMMR	New Mexico Bureau of Mines and Minerals Resources		
NMDG&F	New Mexico Department of Game and Fish		

Acid Ingredient - Acid equivalent (a.e.) - the amount of active ingredient expressed in terms of the parent acid or the amount that theoretically can be converted to the parent acid.

Active Ingredient - That part of a commercial product or spray mix which directly causes the herbicidal effects.

Acre-foot - A unit of a volume of water: the volume that would cover one acre to a depth of one foot.

Activity Plan - A site-specific plan for the management of one or more resources; e.g., an Allotment Management Plan. Activity plans implement decisions made in the Resource Management Plan.

Actual Use - A report of the actual livestock grazing use certified to be accurate by the permittee or lessee.

Age - A period of the history of the earth distinguished by a special feature. A period during which one particular stage of rock formation takes place.

Age Class - One of the intervals, commonly of ten years, into which the age range of tree crops is divided for classification.

Age-Class Distribution - The location and/or proportionate representation of different age classes in a forest.

Allotment - An area of land where one or more permittees graze their livestock. An allotment generally consists of public land, but may include parcels of private or State lands as well. An allotment may consist of one pasture or of several pastures. The number of livestock and season of use are stipulated for each allotment.

Allotment Management Plan (AMP) - An activity plan which applies to livestock grazing on public lands prepared in consultation, cooperation, and coordination with the permittee(s), lessee(s), and other involved or affected parties. An AMP prescribes the

manner and levels livestock grazing will occur; it describes the type, location, ownership, and contribution of rangeland improvements; it defines the objectives or goals for the activity plan.

Allowable Cut - Amount of wood allowed to be cut each year on a sustained-yield basis.

Alluvial Fans - A cone-shaped deposit of alluvium made by an overloaded stream where it runs out onto a level plain or meets a slower stream. The fans generally form where streams issue from mountains upon the lowlands.

Alluvial Sediment - Material deposited by moving water, in river channels and floodplains.

Apparent Trend - The direction of change in rangeland condition over time.

Aquifer - A geologic formation that contains sufficient saturated permeable material to supply a usable quantity of water to wells or springs.

Animal Unit Month (AUM). A grazing unit consisting of the amount of forage required for one mature cow for one month. The relative numbers of sheep, horses, etc., would be based upon the equivalent amount of forage required for one mature cow.

Area of Critical Environmental Concern (ACEC) - An area within the public lands where special management attention is required: (1) to protect and prevent irreparable damage to important historic, cultural or scenic values, to fish and wildlife resources, or to other natural systems or processes; or (2) to protect life and safety from natural hazards.

Authorized Livestock Grazing Use - That portion of the grazing preference or allowable livestock grazing use authorized during a given grazing year.

Baca Formation - A basic rock unit, in northern Catron County about 700 feet thick and made up of red and gray mudstone, arkosic sandstone, and conglomerate (Willard et al. 1959)



Basalt Dikes - A tabulary body of igneous rock that cuts across the structure of adjacent rocks or cuts massive rocks.

Base Flow - Sustained or fair-weather runoff. Generally that portion of the streamflow derived from discharging groundwater or other delayed sources, such as lakes or snow fields.

Brine Aquifer - An aquifer containing water with more than 35,000 mg/l dissolved solids.

Buffer (Strip or Zone) - A zone left untreated with herbicide (at the outer edge of a treated area or along streams) as protection against the effects of treatment.

Candidate Species - Species identified by the U.S. Fish and Wildlife Service as appropriate for listing as threatened or endangered.

Canopy - The continuous cover of branches and foliage formed collectively by the crowns of adjacent trees and other woody growth.

Cauldron - An inclusive term for all volcanic subsidence structures regardless of shape or size, depth of erosion, or connection with the surface.

c.f.s. - Cubic feet per second. A measurement of flowing water.

Class of Livestock - Age and/or sex-group of a kind of livestock. For example: Cows with calves, yearlings, steers, ewes, ewes with lambs, etc.

Colluvium - Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited at the base of steep slopes.

Color-of-Title Act of 1928 - Of primary interest to this document is Class I of that Act, which specifies that an occupant on Federal land can acquire title to the land if it can be shown that the claimant or the claimant's predecessors in interest had a chain of title, acquired in good faith, going back at least twenty years and had cultivated or otherwise made valuable improvements to the land. Class 2 of the Act allows the Federal Government to transfer title to lands held in

good faith prior to January 1, 1901, on which taxes had been paid since that time.

Common Variety Mineral Materials - Widespread deposits of common clay, sand, gravel, or stone which are not subject to disposal under the 1872 Mining Law (as Amended).

Conglomerate - A sedimentary rock composed of rounded waterworn fragments of rock or pebbles cemented together by another mineral substance.

Cretaceous - The third, and final, period of the Mesozoic era, extending from approximately 65 to 136 million years ago.

Critical and Strategic Materials - Materials listed in the National Defense Stockpile Inventory of Critical and Strategic Materials, which are critical to the economy and security of the United States and which have a limited domestic supply.

Cuesta - A hill or ridge with a steep face on one side and a gentle slope on the other.

#### Cultural Resource Inventory:

Class I - An existing data survey. This is an inventory of a study area: (1) to provide a narrative overview of cultural resources by using existing information; and (2) to compile existing cultural resources site record data on which to base the development of the BLM's site record system.

Class II - A sampling field inventory. This is designed to locate from surface and exposed profile indications all cultural resource sites within a portion of an area so that an estimate can be made of the cultural resources for the entire area. The Class II inventory is to be used where an intensive field inventory (Class III) is not practical or necessary.

Class III - An intensive field inventory. This is designed to locate from surface and exposed profile indications all cultural resource sites in an area. Upon its completion normally no further cultural resource inventory work is

needed. A Class III inventory is appropriate for small project areas, all areas to be disturbed, and primary cultural resource areas.

Cultural Resource Management Plan (CRMP) - A written and officially approved plan for an area or a group of resources. It identifies cultural resources protection and use objectives, establishes the specific nature and sequence of actions to achieve objectives, and outlines procedures for evaluating accomplishments.

Deferred Grazing - Discontinuance of grazing by livestock on an area for a specified period of time during the growing season to promote plant reproduction, establishment of new plants, or restoration of vigor by old plants.

Deferred Rotation Grazing - Discontinuance of grazing on various parts of a range in succeeding years allowing each part to rest successively during the growing season to permit seed production, establishment of seedlings, or restoration of plant vigor. Two, but usually three or more, separate units are required.

Demand - In economics, the functional relationship between the price of a given commodity and the quantity that buyers would be willing and able to purchase in a given market during a specified time period.

Discharge - Rate of water flow at a given instant in terms of volume per unit of time. Pumping discharge equals pumping rate and usually is given in gallons per minute (gal/min); stream discharge is usually given in cubic feet per second (c.f.s.). With respect to water underground, the movement of water out of an aquifer. Discharge may be natural, as from springs, from seepage, by evapotranspiration, or it may be artificial, as by constructed drains or wells.

Dissolved Solids - Chemical compounds in solution.

Ecological Condition - The present composition of the vegetation of an ecological site in

relation to the potential natural community. Four condition classes express the relative degree to which the kinds, proportions, and amount of plants resemble the potential natural community usually expressed in a percentage.

Ecological Condition Class - Four classes are used to express the departure of the present plant community from the potential or climax plant community and are expressed as a percentage, as follows:

<u>Class</u>	<u>Percent Departure</u>
Excellent	76-100
Good	51-75
Fair	26-50
Poor	0-25

Eolian - Pertaining to, caused by, or carried by the wind.

Epithermal Deposit - A deposit (of minerals) formed in rocks of shallow depth from low-temperature hydrothermal solutions.

Era - A major division of geological time composed of a number of periods. Example: The Cenozoic era.

Fauna - The total animal content of something, including as represented by fossils.

Federal Land Policy and Management Act of 1976 (FLPMA) - This Act of Congress established public land policy for the management of all lands administered by the BLM. FLPMA specifies several key directions for the BLM, notably that management be on the basis of multiple use and sustained yield; land-use plans be prepared to guide management actions; public lands be managed for the protection, development, and enhancement of resources; public lands generally be retained in Federal ownership; and public participation be included in reaching management decisions.

Foliar Spray Effects - The effects of a liquid spray applied directly to vegetation, usually losing of leaves which prevents photosynthesis (manufacture of food for the plant) which causes the plant to die.



Forest Age - The mean age of trees comprising a forest, crop, or stand.

Formation - The primary unit of formal geologic mapping or description. Most formations possess distinctive or combinations of distinctive lithic features.

Fossil, Fossiliferous - The remains or traces of animals or plants preserved in rock after the original organic material has been transformed or removed by natural causes in the earth's crust, exclusive of organisms which have been buried since the beginning of historic time; containing organic remains.

Fuelwood - Wood used for fuel; firewood.

Geotectonic - Pertaining to the form, arrangement, and structure, of the rock masses composing the earth's crust. Structural.

Gneiss - A coarse-grained metamorphic rock in which bands rich in granular minerals alternate with bands in which schistose minerals predominate.

Graben - A block generally long compared to its width that has been down thrown along faults relative to the rocks on either side.

Granodiorite - A plutonic rock consisting of quartz, calcic oligoclase or andesine, and orthoclase, with biotite, hornblende, or pyroxene as mafic constituents. Granodiorite is intermediate between quartz monzonite and quartz diorite and contains at least twice as much plagioclase as orthoclase.

Grazing Lease - A document authorizing grazing use of public lands lying outside grazing districts. Leases are authorized under Section 15 of the Taylor Grazing Act.

Grazing Permit - A document authorizing grazing use of public lands lying within grazing district boundaries. Permits are authorized under Section 3 of the Taylor Grazing Act.

Grazing Preference - The total number of animal unit months of livestock grazing on

public lands apportioned and attached to base property owned or controlled by a permittee or lessee.

Grazing System - The systematic sequence of grazing use and nonuse on an allotment to reach identified multiple-use goals or objectives by improving the quality and quantity of the vegetation.

Groundwater - Water found beneath the land surface, in the zone of saturation.

Hard Water - Water containing high concentrations of Calcium and Magnesium generally greater than 80 mg/l, as for example, calcium carbonate.

Holistic Resource Management (HRM) - The concept of grazing livestock for short periods of time at heavy concentrations with the idea of fencing pasture boundaries within a "cell" to resemble spokes of a wheel. The "cell" principle required that high concentrations of livestock be rotated through many small fenced pastures in the cell for short durations of grazing (Kelton 1980). The duration of grazing normally was less than seven days and depended on the season and number of pastures in the "cell" (Savory and Parson 1980). Due to the wheel shape, the method has been called the "wheel", "hub" or "cell" system. The centrally located "hub" contains watering and working facilities.

Igneous Rock - Rock formed by solidification of hot molten material termed magma.

Intrusive (petrology) - Having, while fluid, penetrated into or between other rocks, but solidifying before reaching the surface. Said of plutonic igneous rocks and contrasted with effusive or extrusive.

Intrusive Rock - A rock that consolidated from magma beneath the surface of the earth.

Jurassic - The middle period of the Mesozoic era, extending from approximately 136 to 190 million years ago.

Kind of Livestock - Kinds of domestic livestock grazing on rangeland. Includes cattle, horses, sheep, goats, or a combination of these animals.

Known Geologic Structure (KGS) - A trap in which an accumulation of oil and gas has been discovered by drilling and which is determined to be productive. Its limits include all acreage that is presumptively productive (43 CFR 3100.0-5(a)). Lands underlain by a KGS may be leased only through a competitive system.

Latite - Extrusive equivalent of monzonite in which potassium feldspar and plagioclase are present, either as normative or modal minerals in nearly equal amounts.

Leasable Minerals - Those minerals or fluids that can be acquired under lease from the Federal government. These include oil, gas, geothermals, coal, phosphate, sodium, potash, oil shale, sulfur, and all other minerals on acquired lands.

Leucogranite - A light colored granite with between 0 to 30 percent dark minerals.

Licensed Use - Active use AUMs that a permittee has paid for during a given grazing period.

Lithophillic Elements - Elements with a high free energy of oxidation, which tend to concentrate within the earth's siliceous continental crust.

Lithology - The physical character of a rock including color, mineralogy, and grain size.

Locatable Minerals - Minerals or mineral materials subject to disposal under the Mining Law of 1872 (as Amended). These generally include metallic minerals of high intrinsic value, such as gold and silver, and other uncommon varieties not subject to lease or sale, such as sodium bentonite, high-calcium limestone, and perlite.

Magneto-Telluric Survey - A geophysical exploration method of measuring the earth's

natural electrical properties, such as magnetism and electrical conductivity.

Major Land Resource Area (MLRA) - Large geographic areas of land characterized by particular patterns of soil, climate, water resources, and land use.

Management Framework Plan (MFP) - A planning decision document that established land-use allocations, coordination guidelines for multiple use, and management objectives for each class of land use or protection for a given planning area. The MFP was the BLM's land-use plan, and was prepared in three steps: (1) resource recommendations, (2) impact analysis and alternative development, and (3) decision making. Since 1982, BLM land-use plans have been developed under an altered planning system and are called Resource Management Plans (RMPs), this document being one example.

Management Situation Analysis (MSA) - An unpolished, companion document to this RMP that provides the background documentation for the development of alternatives. The MSA consists of the Resource Area Profile, Existing Management Situation, Existing Resource Situation, and Opportunity Analysis.

Memoir - Formally designated and mappable subdivision of a geologic formation.

Mesozoic - One of the great divisions or eras of geologic time, following the Paleozoic and preceding the Cenozoic, including the Triassic, Jurassic, and Cretaceous periods, and extending from approximately 65 to 225 million years ago.

Metamorphic Rock - Includes all those rocks which have formed in the solid state in response to pronounced changes of temperature, pressure, and chemical environment which takes place, in general, below the shells of weathering and cementation.

Metavolcanic - Partly metamorphosed volcanic rocks.



Mica - Any of various colored or transparent mineral silicates crystallizing in monoclinic forms that readily separate into very thin plates.

Micaceous - Containing mica.

Midden - In archeology, a term for accumulated cultural refuse; a trash heap; literally, a manure pile.

Mineral Entry - The availability of Federal lands for location of mines.

Mine Plan - Plan of operation which details how mineral material will be mined and the area reclaimed. Is prepared in order to obtain a mine permit.

Miocene - Fourth of the five epochs into which the Tertiary period is divided. It extends from approximately 5 to 25 million years ago.

Mississippian - Formerly the lower of two epochs into which the Carboniferous was subdivided, now considered a period, and extending from 320 to 345 million years ago.

Monzonite - Granular plutonic rock containing approximately equal amounts of orthoclase and plagioclase, and intermediate between syenite and diorite.

Multiple Use - The management of the public lands and their various resource values so that they are used in the combination that will best meet the present and future needs of the American people. These resources include, but are not limited to, recreation, range, timber, minerals, watershed, wildlife, and fish, as well as natural, scenic, scientific, and historical values. The goal of multiple use is the harmonious and coordinated management of the various resources without permanent impairment of the productivity of the lands and the quality of the environment. Consideration is given to the relative values of the resources, but not necessarily to the combination of uses that will give the greatest economic return or the greatest unit output (see the Federal Land Policy and Management Act).

National Historic Landmark - A designation established by the Historic Sites Act of 1935. That Act gave the Secretary of the Interior responsibility for systematically identifying resources, which, by historic association, architectural or design excellence, or extraordinary information content, are nationally significant. Landmarks include districts, sites, buildings, structures, and objects pivotal in national history, architecture, archeology, or culture. The criteria for landmark status parallel, to some degree, those of the National Register of Historic Places, but the associative, architectural, aesthetic, or informational quality required is significantly greater and must pertain to the Nation rather than to a single place or group of people.

National Register of Historic Places - The official list, established by the National Historic Preservation Act of 1966, of the Nation's cultural resources worthy of preservation. The Register lists archeological, historic, and architectural properties (i.e., districts, sites, buildings, structures, and objects) nominated for their local, State, or national significance by State or Federal agencies, and approved by the National Register staff.

No Surface Occupancy - A fluid mineral leasing stipulation that prohibits occupancy or disturbance of all or part of the lease surface in order to protect special values. Lessees may exploit the oil and gas or geothermal resources in this lease by directional drilling from sites outside the "no surface occupancy" area.

Non-Use - Allowable livestock grazing use (in AUMs) that is authorized but is not to be used during a given time period. Nonuse is applied for and authorized on an annual basis.

ORV Closed - "Closed areas and trails" are designated areas and trails where the use of motorized vehicles (except by authorized users) is permanently or temporarily prohibited.

ORV Limited - "Limited areas and trails" are designated areas and trails where motorized vehicles are subject to restrictions deemed appropriate by an authorized officer. Restrictions may limit the number or types of vehicles allowed, dates and times of use, and similar matters. Limited areas and trails may be designated for special or intensive use such as organized events and may be subject to, but not limited to, rules set forth in 43 CFR 8341.2. ORV use related to mining claim operations will not be restricted, except by regulations and requirements found in 43 CFR 3809, as amended on March 2, 1983. ORV use performed in conformance with existing leases, permits, rights-of-way stipulations, or other land-use authorizations will not be impinged upon.

ORV Open - "Open areas and trails" are designated areas and trails where motorized vehicles may be operated subject to the operating regulations and vehicle standards set forth in 43 CFR 8341 and BLM Manual 8343.

Oligocene - The third of five epochs into which the Tertiary period is divided. It extends from approximately 25 to 36 million years ago.

Paleocene - The first of five epochs into which the Tertiary period is divided. It extends from approximately 58 to 65 million years ago.

Paleontology - A subdivision of geology, biology, or anthropology which deals with the study of ancient life forms and their evolution. It is based on the study of their fossilized remains.

Patent - As it relates to the public land laws, the instrument (or deed) by which the Federal Government conveys title to the public lands.

Patented Claim - A claim on which title has passed from the Federal government to the mining claimant under the Mining law of 1872.

Pegmatite - Those igneous rocks of coarse grain found usually as dikes and associated

with a large mass of plutonic rock of finer grain size.

Pennsylvanian - Formerly the upper of two epochs into which the Carboniferous was subdivided; now considered a period, and extending from approximately 290 to 320 million years ago.

Period - The basic unit of geologic time, during which a standard rock system is formed, comprising several epochs and included with other periods in an era. Example: The Cretaceous Period, duration of the Cretaceous System.

Perlite - Volcanic glass having numerous concentric cracks and a higher water content than obsidian. When it is heated to a high temperature, perlite expands to form a light, fluffy material which is used for building plaster aggregate, filter aids, insulation, and soil conditioner.

Permian - The final period of the Mesozoic era, extending from approximately 230 to 290 million years ago.

Persistence - The resistance of a herbicide to metabolism and environmental degradation and thus a herbicide's retention of its ability to kill plants for prolonged periods.

Physiographic Province - An extensive region of similar geologic structures and climates that encompass many hundreds of square miles.

Piedmont - Area lying or formed at the base of mountains.

Plan of Operation - A plan required when mining activities will disturb 5 or more acres of land, or will disturb special areas. This plan should describe the equipment to be used, locations of access, support facilities, drill sites, and measures which will be taken to prevent unnecessary or undue degradation.

Pleistocene - The earlier of the two epochs comprised in the Quaternary period, extending from approximately 12,000 to 2 million years ago.



Pliocene - The last of five epochs of the Tertiary period and the series of rocks deposited during that time. It is thought to have covered the time span between 5 and 2 million years ago.

Pluton - In the strictest sense, a body of igneous rock that has formed beneath the surface of the earth by consolidation from magma. In a broader sense, it may include bodies composed of pseudoigneous rock that formed beneath the surface of the earth by the metasomatic replacement of an older rock.

Porphyry - A rock texture characterized by large megascopic crystals surrounded by a matrix of microscopic minerals.

ppm - parts per million. A measurement of the concentration of a substance in a medium such as water or air.

Precambrian - The period of geologic time from approximately 570 million years ago, back to the formation of the earth.

Public lands - Any land and interest in land owned by the United State and administered by the Secretary of the Interior through the Bureau of Land Management, without regard to how the United States acquired ownership, except:

- lands located on the Outer Continental shelf
- lands held for the benefit of Indians, Aleuts, or Eskimos
- lands in which the United States retains the minerals, but surface is private.

Pumiceous - Having the foamy structure of pumice.

Quartzite - A granulose metamorphic rock consisting essentially of quartz. Sandstone cemented by silica which has grown in optical continuity around each fragment.

Quaternary - A unit in geologic time extending from present time to approximately 2 million years ago.

Range Site - A distinctive kind of rangeland that differs from other kinds of rangeland in its ability to produce a characteristic natural plant community, is the product of all environmental factors responsible for its development, and is capable of supporting a native plant community typified by an association of species that differs from that of other range sites in the kind or proportion of species or in total production.

Range Trend - Changes in vegetative and soil characteristics resulting directly from environmental factors, primarily climate and grazing.

Range Land - Land on which the vegetation is predominantly grasses, grass-like plants, forbs, or shrubs usually suitable for grazing or browsing use.

Raptors - Birds of prey, such as hawks, owls, and eagles. One of the behavior characteristics of these animals is to return, year after year, to the same nesting area. Accordingly, the nesting sites of these protected species should be retained with minimal human disturbance.

Recreation and Public Purposes Act (R&PP Act) - An Act which authorizes the Secretary of the Interior, under specific conditions, to sell or lease public domain lands to State and local governments for recreation and other public purposes, or to qualified nonprofit organizations for public or quasi-public purposes, such as recreation, education, and health.

Recreation Opportunity Spectrum (ROS) - A framework for stratifying and defining classes of outdoor recreation opportunity environments.

Red Bed - Red sedimentary rocks, usually sandstones and shales, whose red color is the result of ferric anhydride cementation.

Research Natural Area - An area that is established and maintained for the primary purpose of research and education because the land has one or more of the following characteristics: (1) a typical representation

of a common plant or animal association; (2) an unusual plant or animal association; (3) a threatened or endangered plant or animal species; (4) a typical representation of common geologic, soil, or water features; or (5) outstanding or unusual geologic, soil, or water features.

Residuum - Something that remains behind after a process is completed, i.e., a deposit or sediment.

Rest-Rotation Grazing - An intensive system of management whereby grazing is deferred on various parts of the range during succeeding years. One unit in the system is usually allowed rest for a full year each year and others are rested for shorter periods of time or not at all. Two or more units are required. Control by fencing is usually necessary on cattle ranges but may be obtained by herding on sheep ranges.

Rhyolite - General name for fine-grained igneous rocks having a similar chemical composition to granite and commonly occurring as lava flows.

Rill and Gully Erosion - Erosion of the land surface which results in small- to well-defined depressions or channels.

Rift - A large strike-slip fault parallel to the regional structure. The intersection of a fault plane with the surface.

Right-of-Way Corridor - A narrow band or strip of land designated as suitable for the placement of linear facilities such as roads, transmission lines, and pipelines.

Riprap - Broken rock used for revetment, the protection for bluffs or structures exposed to wave action, foundations, etc. Foundation or wall of broken rock thrown together irregularly.

Rotation Grazing - Orderly sequence of use when each subdivision is grazed and deferred during the same grazing season or calendar year.

Saleable Minerals - Common variety mineral materials (sand, gravel, etc.) which are disposed of by sale by the Federal Government under the Material Sales Act of 1947.

Salvage Cutting - Exploitation of trees that are dead, dying, or deteriorating before their timoer becomes worthless.

Sawn Timoer - Timoer cut by a saw to any dimensions.

Scenic Quality - The relative worth of a landscape from a visual point-of-view.

Scenic Quality Rating - The relative scenic quality (A, B, or C) assigned to a landscape by applying the scenic quality evaluation key factors. A is the highest rating, B is intermediate, and C is the lowest.

Schist - A medium or coarse-grained metamorphic rock with subparallel orientation of the micaceous minerals which dominate its composition.

Sedimentary Rock - A rock formed by the accumulation and cementation of mineral grains transported by wind, water, or ice to the place of deposition, or are chemically deposited at the place of deposition. The principal sedimentary rocks are sandstones, shales, limestones, and conglomerates.

Seismic Exploration - The use of seismic techniques, usually involving explosions, to map subsurface geologic structures with the aim of locating economic deposits.

Selected Stand - A stand of trees superior to the accepted mean for the prevailing ecological conditions when judged by isolation against contaminant pollen from inferior sources, uniformity, volume production, wood quality, stem form or growth habit, health and resistance to pests, diseases, and adverse climatic factors; and large enough in area to ensure adequate interpollenation, and old enough to judge the above criteria clearly.

Shot-Hole Seismic Exploration - The use of seismic techniques, using explosions, to map



suosurface geologic structures with the aim of locating economic deposits. Syn: Prospecting seismology; applied seismology.

Siliceous - Of or pertaining to silica; containing silica, or partaking of its nature. Containing abundant quartz.

Sill - An intrusive body of igneous rock of approximately uniform thickness and relatively thin compared with its lateral extent, which has been emplaced parallel to the bedding or schistosity of the intruded rocks.

Silviculture - Cultivation of forest trees; art of producing and tending a forest; application of the knowledge of silvics in treatment of a forest; theory and practice of controlling forest establishment, composition, and growth.

Site Index - Measure of site quality, based on the height of the dominant tree at an arbitrarily chosen age.

Skarns - Generally refers to limestones and dolomites which have been chemically altered and recrystallized by nearby igneous activity.

Slash - Residue left on ground after tree felling and tending, and/or that residue accumulating there as the result of storm, fire, girdling, or poisoning.

Slash Disposal - Treatment or handling of slash, particularly so as to reduce fire or insect hazard.

Special Management Area (SMA) - An area requiring special management by BLM to protect one or more resource values. SMA may include nonpublic lands that BLM wishes to acquire or to bring under a Cooperative Management Agreement to better manage the valued resource. At a minimum, an activity plan will be prepared for an SMA. SMAs may be given designations under various existing labels, such as Area of Critical Environmental Concern (ACEC) or Research Natural Area (RNA).

Split Estate - Lands where surface and mineral estates have been severed and are under

different ownership (i.e., private surface with public minerals).

Stand - A group of growing trees of a particular species in a given area.

Stratigraphy - The geologic science of the description, correlation, and classification of layers of sedimentary rocks, including interpretations of their depositional environments.

Stream Capacity - The natural capacity of a stream channel to contain water.

Streamflow - The discharge that occurs in a natural channel of a surface stream course.

Supply - The functional relationship between the price of a given commodity or service and the quantity that sellers would be willing and able to sell in a given market during a specified time period.

Surface Flow - Water moving over the ground surface and through channels to reach the ocean outlet.

Surficial - Characteristic of, pertaining to, farming or, situated at or occurring on the earth's surface.

Sustained Yield - The achievement and maintenance, in perpetuity, of a high level of annual or periodic output of the various renewable resources of the public lands consistent with multiple use. Amount of resource harvested normally equals the amount grown since the previous harvest.

Tectonic - Relating to the deformation of the earth's crust.

Tertiary - The earlier of the two geologic periods comprised in the Cenozoic era extending from approximately 2 to 65 million years ago.

Threatened and Endangered Species - Plants and animals listed by the U.S. Fish and Wildlife Service or the State of New Mexico as threatened or endangered.

Total Dissolved Solids (TDS) - The amount of particles dissolved in a liquid. The common and synonymously-used term for TDS is "salt."

Tract - A defined area of land which will logically be proposed as a single lease offering. A piece or parcel of land. At the preliminary tract stage, the exact boundaries of tracts would still be subject to adjustment, based on subsequent analysis.

Transmission Line - Any electrical transmission line of 69 kilovolt capacity or greater or any gas line of 6-inch diameter or greater.

Triassic - The earliest of the three geologic periods comprised in the Mesozoic era and extending from approximately 190 to 230 million years ago.

Tuff - A compacted deposit that is 50 percent or more volcanic ash and dust.

Type Locality - The place at which a stratigraphic unit (such as a formation or a series) is typically displayed and from which it derives its name. It contains the type section and is contained within the type area.

Unpatented Mining Claim - A claim made under the authority of the Mining Law of 1872 on vacant, unappropriated public land, where valuable locatable minerals have been discovered.

Utilization - The portion of a year's forage production that is consumed or destroyed by grazing animals, usually expressed as a percentage.

Valid Existing Rights - Legal interests that attach to a land or mineral estate that cannot be divested from the estate until that interest expires or is relinquished.

Vegetative Composition - The proportion of the total vegetation cover or weight provided by each species, usually expressed as a percentage.

Vegetation Aspect - The kind of plant or plant species which is visually most prominent in an area.

Vegetative Land Treatments - Methods used to control the growth and spread of undesirable vegetation. Control can be by chemical (herbicides) or mechanical means or by fire.

Vidroseis - A seismic method using a vibrator to generate seismic waves, where the frequency of the vibrator is varied continuously. A Continental Oil Company trademark.

Visual Resource Management (VRM) - The system by which BLM classifies and manages the visual resource of the public lands. Based on their scenic qualities, sensitivities, and the distances from which they are viewed, the lands are classified into management units. The system includes actions taken to identify visual values, to establish objectives for managing these values, and to achieve the visual management objectives.

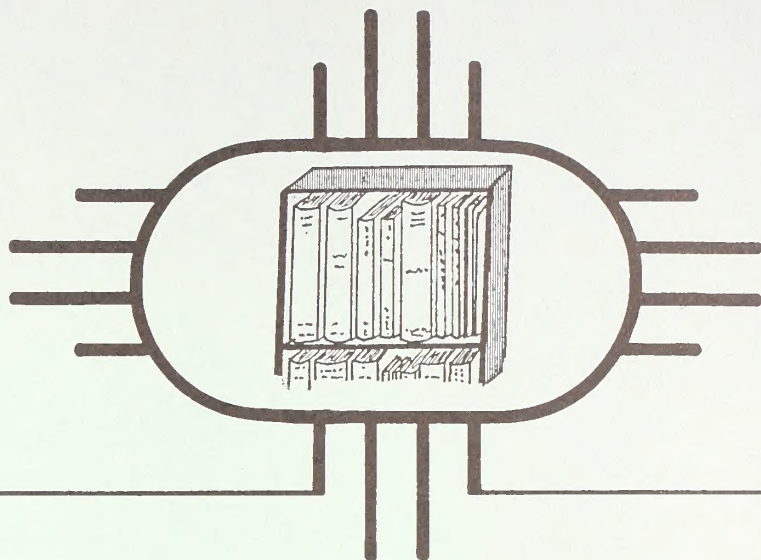
Volcanic Plugs - Necks consisting of a monolithic mass of solidified igneous rock.

Weir - An obstruction placed in a stream or channel to divert water through a prepared aperture.

Withdrawal - Actions which restrict the use of public land and segregate the land from the operation of some or all of the public land or mineral laws. Withdrawals are also used to transfer jurisdiction of management to other Federal agencies.

Woodland - Forest land not capable of producing 20 cubic feet of timber per acre per year; e.g., pinyon-juniper stands.





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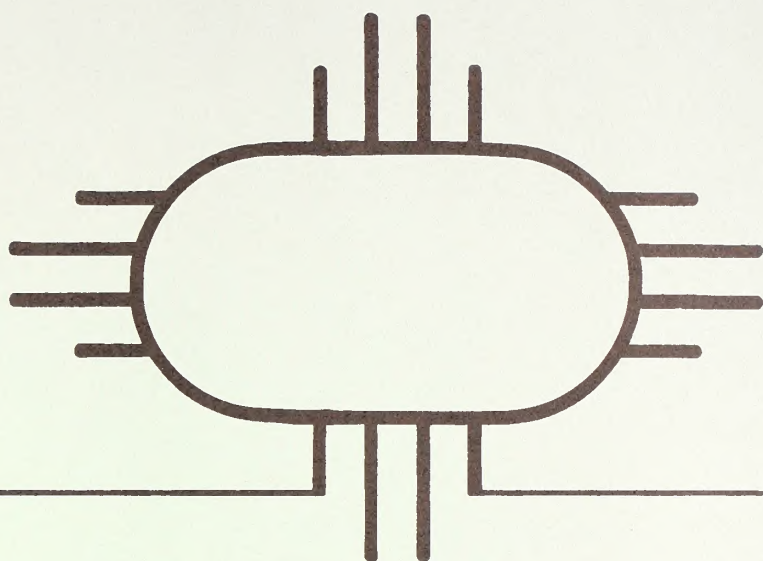
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# INDEX

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Advisory Council on Historic Preservation (ACHP) . . . . . 2-18, 5-1, C-5, C-17, M-8, M-15  
 Allotment Categorization . . . . . 2-5, 2-7, 2-8, A-9, C-1  
 American Indian Religious Freedom Act (AIRFA) . . . . . 2-17, 3-50  
 Area of Critical Environmental Concern (ACEC) . . . . . S-2, 2-10, 2-20, 2-21, 2-26, 2-34, 2-42, 2-49  
     3-51, 3-52, 4-1, 4-13, 4-49, 4-55, 4-63, 4-74, B-6, E-2, L-1, L-2, L-4, L-7, L-12, L-14, L-16  
     L-17, L-19, L-30, L-34, L-38, L-46, L-48, L-51, L-53, L-54, L-55, L-56  
 Color-of-Title Act of 1928 . . . . . 2-11  
 Endangered Species Act of 1973 (ESA) . . . . . 2-4, 2-15, 3-17, 3-18  
 Environmental Protection Agency (EPA) . . . . . 2-14, 3-37, 5-3, C-16, C-18, M-14  
 Federal Land Policy and Management Act (FLPMA) . . . . . 1-1, 2-1, 2-9, 2-11, 2-15, 2-21, 3-33, 4-2  
     E-1, E-2, L-1  
 Holistic Grazing System . . . . . 2-8, 4-4  
 Major Land Resource Areas (MLRA) . . . . . 3-15, 3-17, 3-18, 3-35, C-10  
 Management Framework Plan (MFP) . . . . . 1-1, 2-1, 2-3, 2-9, 2-11, 2-20, 2-21, 2-24, 3-31, 3-32  
     4-13, 4-15, 4-20, A-1, A-3, A-5, A-10, I-4, M-1  
 Material Disposal Act of 1947 . . . . . 2-12, 2-13, 3-33  
 Middle Rio Grande Occupancy Resolution Program (MRGORP) . . . . . 2-10, 2-11, 2-18, 3-31  
 Mining Control and Reclamation Act of 1977 . . . . . M-5, M-7, M-12  
 Mining Law of 1872, As Amended . . . . . M-13  
 National Environmental Policy Act (NEPA) . . . . . 1-1, 2-4, 2-10, 2-11, 2-14, 2-23, 3-50, B-5, E-3  
 National Historic Preservation Act of 1966 . . . . . 2-17, 2-18, 3-49  
 National Register of Historic Places . . . . . 2-18, 4-18, 4-21, 4-68, 4-73, M-5, M-8, M-15  
 National Resources Defense Council (NRDC) . . . . . 2-4  
 Nature Conservancy . . . . . 5-3, L-3, L-16, L-46, L-53, L-55  
 New Mexico Bureau of Mines and Mineral Resources (NMBMMR) . . . . . 2-18, 2-21, 3-3, 3-5, 5-3, M-1  
     R-1, R-7  
 New Mexico Department of Game (NMDG&F). 2-15, 2-16, 3-38, 3-45, 5-1, 5-3, L-18, M-10, M-11, M-14  
 New Mexico Department of Natural Resources (NMDNR) . . . . . 5-3, L-3, L-46, L-53, L-54, L-55  
 New Mexico State Highway Department . . . . . 3-15, 5-3  
 New Mexico State Division of Forestry . . . . . 2-15, 3-34  
 Office of Surface Mining (OSM) . . . . . 5-3, M-12, M-15  
 Public Rangelands Improvement Act of 1978 (PRIA) . . . . . 2-4, 2-8, 2-15, 5-2  
 Recreation and Public Purposes Act (R&PP) . . . . . 2-11, 2-29, 2-40, 2-48, 3-31, 3-32, 4-1, 4-2  
     B-7, E-3, M-14  
 Salt River Project (SRP) . . . . . 2-3, 3-3, 3-5, 3-15  
 Shell Western Exploration and Production Incorporated (SWEPI) . . . . . 3-5, 3-7, 4-26, 4-28  
     4-43, 4-44, 4-60, 5-3  
 Small Holding Claim Act of 1891 . . . . . 3-31  
 Soil Conservation Service (SCS) . . . . . 2-13, 3-15, 3-18, 3-20, 3-34, 5-3, 5-4, C-10, C-12, C-19, G-4  
 Special Management Area (SMA) . . . . . S-1, S-4, 2-14, 2-26, 2-34, 2-42, 2-49, 4-5, 4-6  
     4-8, 4-13, 4-16, 4-18, 4-22, 4-26, 4-28, 4-35, 4-36, 4-37, 4-44, 4-50, 4-52, 4-53, 4-54, 4-60  
     4-62, 4-63, 4-65, 4-67, 4-68, 4-74, D-1, H-7, Appendix L, M-15  
 State Historic Preservation Officer (SHPO) . . . . . 2-18, 5-1, 5-3, C-17, M-8, M-15  
 Surface Mining Control and Reclamation Act of 1977 . . . . . 4-6, 4-8, E-1  
 Taylor Grazing Act of 1934 . . . . . 2-4, 3-20, 3-24, 4-25  
 Threatened or Endangered Animal (T&E) . . . . . 1-6, 2-10, 2-16, 2-29, 2-49, 3-45, 4-4, 4-21, 4-39  
     4-56, 5-3, B-6, C-15, C-18, D-1, E-2, M-9  
 Threatened or Endangered Plant (T&E) . . . . . 1-5, 2-10, 2-32, 2-38, 2-40, 2-48, 2-49, 3-17, 4-15  
     4-16, 4-18, 4-33, 4-35, 4-51, 4-66, 5-3, 5-4, C-18, D-1, E-2, L-1, L-16, L-53, M-8, M-9, M-13  
 U.S. Bureau of Reclamation (BOR) . . . . . 5-3  
 U.S. Fish and Wildlife Service (FWS) . . . . . 2-16, 2-26, 3-17, 5-1, 5-3, A-3, C-18  
     L-6, L-11, L-16, L-19, L-53, M-9, M-10, M-11, M-14  
 U.S. Forest Service (FS) . . . . . 2-12, 2-15, 2-26, 3-7, 3-27, 3-29, 3-34, 4-31, 5-3  
 White Sands Missile Range (WSMR) . . . . . 2-26, 2-29, 2-34, 2-38, 2-44, 2-49, 3-29, 3-32, 4-6  
     4-8, 4-26, 4-44, 4-60, 4-62, 4-63, B-5, B-7, B-9, H-6  
 Wild and Free Roaming Horse and Burro Act of 1971 . . . . . 2-26, 3-27

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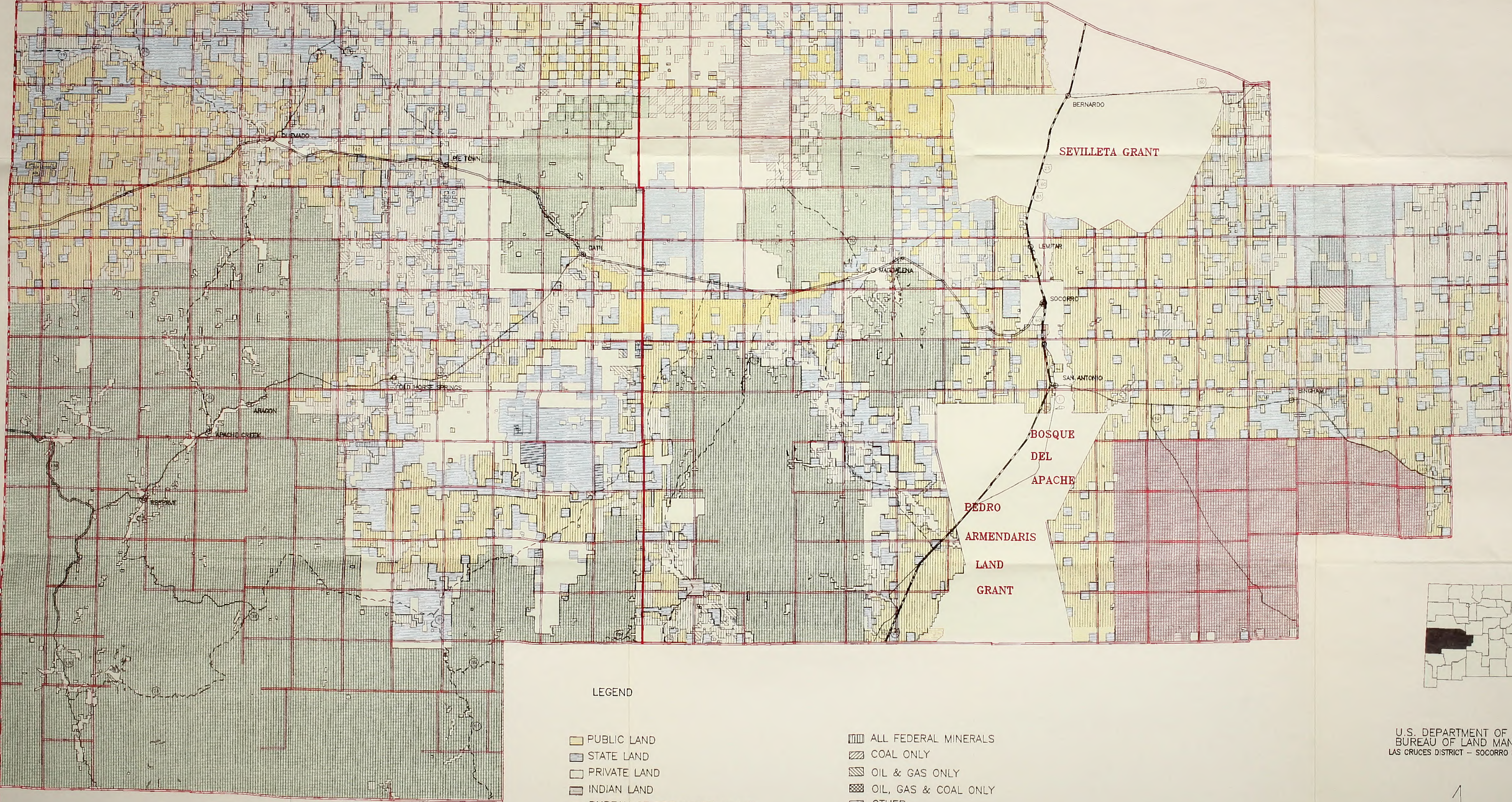


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